



SEQUENCE LISTING

<110> Xia, Yu-Ping et al.

<120> METHODS FOR TREATING INFLAMMATORY SKIN DISEASES

<130> REG 710b

<140> 09/773,877

<141> 2001-01-31

<160> 27

<170> PatentIn version 3.0

<210> 1

<211> 36

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 1

gactagcagt ccggaggtag accttttcgta gagatg .

36

<210> 2

<211> 33

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 2

cggactcaga accacatcta tgattgtatt ggt

33

<210> 3

<211> 35

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 3

acaatcatag atgtgggttct gagtccgtct catgg

35

<210> 4

<211> 38

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 4

gataatgccc gggccctttt catggaccct gacaaatg

38

<210> 5

<211> 36

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 5
gactagcagt ccggaggtag acctttcgta gagatg 36

<210> 6

<211> 38

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 6
ttcctgggca acagctggat atctatgatt gtattggt 38

<210> 7

<211> 39

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 7
atccagctgt tgcccaggaa gtcgctggag ctgctggta 39

<210> 8

<211> 39

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 8
attttcatgc acaatgacct cggtgctctc ccgaaatcg 39

<210> 9

<211> 38

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 9

tcatagatat ccagctgttg cccaggaagt cgctggag

38

<210> 10

<211> 39

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 10

gataatgccccc gggccatttt catgcacaat gacctcggt

39

<210> 11

<211> 1704

<212> DNA

<213> Artificial

<220>

<223> Flt1(1-3)-Fc

<220>

<221> CDS

<222> (1) .. (1704)

| | | | | | | | | | | | | | | | | | |
|-----------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|
| <400> 11 | | | | | | | | | | | | | | | | | |
| atg gtc agc tac tgg gac acc ggg gtc ctg ctg tgc gcg ctg ctc agc | | | | | | | | | | | | | | | | | 48 |
| Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu Leu Ser | | | | | | | | | | | | | | | | | |
| 1 5 10 15 | | | | | | | | | | | | | | | | | |
| tgt ctg ctt ctc aca gga tct agt tca ggt tca aaa tta aaa gat cct | | | | | | | | | | | | | | | | | 96 |
| Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Ser Lys Leu Lys Asp Pro | | | | | | | | | | | | | | | | | |
| 20 25 30 | | | | | | | | | | | | | | | | | |
| gaa ctg agt tta aaa ggc acc cag cac atc atg caa gca ggc cag aca | | | | | | | | | | | | | | | | | 144 |
| Glu Leu Ser Leu Lys Gly Thr Gln His Ile Met Gln Ala Gly Gln Thr | | | | | | | | | | | | | | | | | |
| 35 40 45 | | | | | | | | | | | | | | | | | |
| ctg cat ctc caa tgc agg ggg gaa gca gcc cat aaa tgg tct ttg cct | | | | | | | | | | | | | | | | | 192 |
| Leu His Leu Gln Cys Arg Gly Glu Ala Ala His Lys Trp Ser Leu Pro | | | | | | | | | | | | | | | | | |
| 50 55 60 | | | | | | | | | | | | | | | | | |
| gaa atg gtg agt aag gaa agc gaa agg ctg agc ata act aaa tct gcc | | | | | | | | | | | | | | | | | 240 |
| Glu Met Val Ser Lys Glu Ser Glu Arg Leu Ser Ile Thr Lys Ser Ala | | | | | | | | | | | | | | | | | |
| 65 70 75 80 | | | | | | | | | | | | | | | | | |
| tgt gga aga aat ggc aaa caa ttc tgc agt act tta acc ttg aac aca | | | | | | | | | | | | | | | | | 288 |
| Cys Gly Arg Asn Gly Lys Gln Phe Cys Ser Thr Leu Thr Leu Asn Thr | | | | | | | | | | | | | | | | | |
| 85 90 95 | | | | | | | | | | | | | | | | | |
| gct caa gca aac cac act ggc ttc tac agc tgc aaa tat cta gct gta | | | | | | | | | | | | | | | | | 336 |
| Ala Gln Ala Asn His Thr Gly Phe Tyr Ser Cys Lys Tyr Leu Ala Val | | | | | | | | | | | | | | | | | |
| 100 105 110 | | | | | | | | | | | | | | | | | |
| cct act tca aag aag aag gaa aca gaa tct gca atc tat ata ttt att | | | | | | | | | | | | | | | | | 384 |
| Pro Thr Ser Lys Lys Lys Glu Thr Glu Ser Ala Ile Tyr Ile Phe Ile | | | | | | | | | | | | | | | | | |
| 115 120 125 | | | | | | | | | | | | | | | | | |
| agt gat aca ggt aga cct ttc gta gag atg tac agt gaa atc ccc gaa | | | | | | | | | | | | | | | | | 432 |
| Ser Asp Thr Gly Arg Pro Phe Val Glu Met Tyr Ser Glu Ile Pro Glu | | | | | | | | | | | | | | | | | |
| 130 135 140 | | | | | | | | | | | | | | | | | |
| att ata cac atg act gaa gga agg gag ctc gtc att ccc tgc cgg gtt | | | | | | | | | | | | | | | | | 480 |
| Ile Ile His Met Thr Glu Gly Arg Glu Leu Val Ile Pro Cys Arg Val | | | | | | | | | | | | | | | | | |
| 145 150 155 160 | | | | | | | | | | | | | | | | | |
| acg tca cct aac atc act gtt act tta aaa aag ttt cca ctt gac act | | | | | | | | | | | | | | | | | 528 |
| Thr Ser Pro Asn Ile Thr Val Thr Leu Lys Lys Phe Pro Leu Asp Thr | | | | | | | | | | | | | | | | | |
| 165 170 175 | | | | | | | | | | | | | | | | | |
| ttg atc cct gat gga aaa cgc ata atc tgg gac agt aga aag ggc ttc | | | | | | | | | | | | | | | | | 576 |
| Leu Ile Pro Asp Gly Lys Arg Ile Ile Trp Asp Ser Arg Lys Gly Phe | | | | | | | | | | | | | | | | | |
| 180 185 190 | | | | | | | | | | | | | | | | | |
| atc ata tca aat gca acg tac aaa gaa ata ggg ctt ctg acc tgt gaa | | | | | | | | | | | | | | | | | 624 |
| Ile Ile Ser Asn Ala Thr Tyr Lys Glu Ile Gly Leu Leu Thr Cys Glu | | | | | | | | | | | | | | | | | |
| 195 200 205 | | | | | | | | | | | | | | | | | |
| gca aca gtc aat ggg cat ttg tat aag aca aac tat ctc aca cat cga | | | | | | | | | | | | | | | | | 672 |
| Ala Thr Val Asn Gly His Leu Tyr Lys Thr Asn Tyr Leu Thr His Arg | | | | | | | | | | | | | | | | | |
| 210 215 220 | | | | | | | | | | | | | | | | | |
| caa acc aat aca atc ata gat gtc caa ata agc aca cca cgc cca gtc | | | | | | | | | | | | | | | | | 720 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Gln | Thr | Asn | Thr | Ile | Ile | Asp | Val | Gln | Ile | Ser | Thr | Pro | Arg | Pro | Val | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| aaa | tta | ctt | aga | ggc | cat | act | ctt | gtc | ctc | aat | tgt | act | gct | acc | act | 768 |
| Lys | Leu | Leu | Arg | Gly | His | Thr | Leu | Val | Leu | Asn | Cys | Thr | Ala | Thr | Thr | |
| | | | | 245 | | | | | 250 | | | | | 255 | | |
| ccc | ttg | aac | acg | aga | gtt | caa | atg | acc | tgg | agt | tac | cct | gat | gaa | aaa | 816 |
| Pro | Leu | Asn | Thr | Arg | Val | Gln | Met | Thr | Trp | Ser | Tyr | Pro | Asp | Glu | Lys | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| aat | aag | aga | gct | tcc | gta | agg | cga | cga | att | gac | caa | agc | aat | tcc | cat | 864 |
| Asn | Lys | Arg | Ala | Ser | Val | Arg | Arg | Arg | Ile | Asp | Gln | Ser | Asn | Ser | His | |
| | | 275 | | | | | 280 | | | | | 285 | | | | |
| gcc | aac | ata | ttc | tac | agt | gtt | ctt | act | att | gac | aaa | atg | cag | aac | aaa | 912 |
| Ala | Asn | Ile | Phe | Tyr | Ser | Val | Leu | Thr | Ile | Asp | Lys | Met | Gln | Asn | Lys | |
| | 290 | | | | | 295 | | | | | 300 | | | | | |
| gac | aaa | gga | ctt | tat | act | tgt | cgt | gta | agg | agt | gga | cca | tca | ttc | aaa | 960 |
| Asp | Lys | Gly | Leu | Tyr | Thr | Cys | Arg | Val | Arg | Ser | Gly | Pro | Ser | Phe | Lys | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| tct | gtt | aac | acc | tca | gtg | cat | ata | tat | gat | aaa | gca | ggc | ccg | ggc | gag | 1008 |
| Ser | Val | Asn | Thr | Ser | Val | His | Ile | Tyr | Asp | Lys | Ala | Gly | Pro | Gly | Glu | |
| | | | | 325 | | | | | 330 | | | | | 335 | | |
| ccc | aaa | tct | tgt | gac | aaa | act | cac | aca | tgc | cca | ccg | tgc | cca | gca | cct | 1056 |
| Pro | Lys | Ser | Cys | Asp | Lys | Thr | His | Thr | Cys | Pro | Pro | Cys | Pro | Ala | Pro | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
| gaa | ctc | ctg | ggg | gga | ccg | tca | gtc | ttc | ctc | ttc | ccc | cca | aaa | ccc | aag | 1104 |
| Glu | Leu | Leu | Gly | Gly | Pro | Ser | Val | Phe | Leu | Phe | Pro | Pro | Lys | Pro | Lys | |
| | | 355 | | | | | 360 | | | | | 365 | | | | |
| gac | acc | ctc | atg | atc | tcc | cgg | acc | cct | gag | gtc | aca | tgc | gtg | gtg | gtg | 1152 |
| Asp | Thr | Leu | Met | Ile | Ser | Arg | Thr | Pro | Glu | Val | Thr | Cys | Val | Val | Val | |
| | 370 | | | | | 375 | | | | | 380 | | | | | |
| gac | gtg | agc | cac | gaa | gac | cct | gag | gtc | aag | ttc | aac | tgg | tac | gtg | gac | 1200 |
| Asp | Val | Ser | His | Glu | Asp | Pro | Glu | Val | Lys | Phe | Asn | Trp | Tyr | Val | Asp | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| ggc | gtg | gag | gtg | cat | aat | gcc | aag | aca | aag | ccg | cgg | gag | gag | cag | tac | 1248 |
| Gly | Val | Glu | Val | His | Asn | Ala | Lys | Thr | Lys | Pro | Arg | Glu | Glu | Gln | Tyr | |
| | | | | 405 | | | | | 410 | | | | | 415 | | |
| aac | agc | acg | tac | cgt | gtg | gtc | agc | gtc | ctc | acc | gtc | ctg | cac | cag | gac | 1296 |
| Asn | Ser | Thr | Tyr | Arg | Val | Val | Ser | Val | Leu | Thr | Val | Leu | His | Gln | Asp | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| tgg | ctg | aat | ggc | aag | gag | tac | aag | tgc | aag | gtc | tcc | aac | aaa | gcc | ctc | 1344 |
| Trp | Leu | Asn | Gly | Lys | Glu | Tyr | Lys | Cys | Lys | Val | Ser | Asn | Lys | Ala | Leu | |
| | | 435 | | | | | 440 | | | | | 445 | | | | |
| cca | gcc | ccc | atc | gag | aaa | acc | atc | tcc | aaa | gcc | aaa | ggg | cag | ccc | cga | 1392 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Pro | Ala | Pro | Ile | Glu | Lys | Thr | Ile | Ser | Lys | Ala | Lys | Gly | Gln | Pro | Arg | |
| 450 | | | | | | 455 | | | | | 460 | | | | | |
| gaa | cca | cag | gtg | tac | acc | ctg | ccc | cca | tcc | cgg | gat | gag | ctg | acc | aag | 1440 |
| Glu | Pro | Gln | Val | Tyr | Thr | Leu | Pro | Pro | Ser | Arg | Asp | Glu | Leu | Thr | Lys | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| aac | cag | gtc | agc | ctg | acc | tgc | ctg | gtc | aaa | ggc | ttc | tat | ccc | agc | gac | 1488 |
| Asn | Gln | Val | Ser | Leu | Thr | Cys | Leu | Val | Lys | Gly | Phe | Tyr | Pro | Ser | Asp | |
| | | | | 485 | | | | | 490 | | | | | 495 | | |
| atc | gcc | gtg | gag | tgg | gag | agc | aat | ggg | cag | ccg | gag | aac | aac | tac | aag | 1536 |
| Ile | Ala | Val | Glu | Trp | Glu | Ser | Asn | Gly | Gln | Pro | Glu | Asn | Asn | Tyr | Lys | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| acc | acg | cct | ccc | gtg | ctg | gac | tcc | gac | ggc | tcc | ttc | ttc | ctc | tac | agc | 1584 |
| Thr | Thr | Pro | Pro | Val | Leu | Asp | Ser | Asp | Gly | Ser | Phe | Phe | Leu | Tyr | Ser | |
| | | 515 | | | | | 520 | | | | | 525 | | | | |
| aag | ctc | acc | gtg | gac | aag | agc | agg | tgg | cag | cag | ggg | aac | gtc | ttc | tca | 1632 |
| Lys | Leu | Thr | Val | Asp | Lys | Ser | Arg | Trp | Gln | Gln | Gly | Asn | Val | Phe | Ser | |
| | 530 | | | | | 535 | | | | | 540 | | | | | |
| tgc | tcc | gtg | atg | cat | gag | gct | ctg | cac | aac | cac | tac | acg | cag | aag | agc | 1680 |
| Cys | Ser | Val | Met | His | Glu | Ala | Leu | His | Asn | His | Tyr | Thr | Gln | Lys | Ser | |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| ctc | tcc | ctg | tct | ccg | ggc | aaa | tga | | | | | | | | | 1704 |
| Leu | Ser | Leu | Ser | Pro | Gly | Lys | | | | | | | | | | |
| | | | | 565 | | | | | | | | | | | | |

<210> 12

<211> 567

<212> PRT

<213> Artificial

<400> 12

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Val | Ser | Tyr | Trp | Asp | Thr | Gly | Val | Leu | Leu | Cys | Ala | Leu | Leu | Ser |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cys | Leu | Leu | Leu | Thr | Gly | Ser | Ser | Ser | Gly | Ser | Lys | Leu | Lys | Asp | Pro |
| | | | 20 | | | | 25 | | | | | | 30 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Leu | Ser | Leu | Lys | Gly | Thr | Gln | His | Ile | Met | Gln | Ala | Gly | Gln | Thr |
| | | 35 | | | | | 40 | | | | | 45 | | | |

Leu His Leu Gln Cys Arg Gly Glu Ala Ala His Lys Trp Ser Leu Pro
 50 55 60

Glu Met Val Ser Lys Glu Ser Glu Arg Leu Ser Ile Thr Lys Ser Ala
 65 70 75 80

Cys Gly Arg Asn Gly Lys Gln Phe Cys Ser Thr Leu Thr Leu Asn Thr
 85 90 95

Ala Gln Ala Asn His Thr Gly Phe Tyr Ser Cys Lys Tyr Leu Ala Val
 100 105 110

Pro Thr Ser Lys Lys Lys Glu Thr Glu Ser Ala Ile Tyr Ile Phe Ile
 115 120 125

Ser Asp Thr Gly Arg Pro Phe Val Glu Met Tyr Ser Glu Ile Pro Glu
 130 135 140

Ile Ile His Met Thr Glu Gly Arg Glu Leu Val Ile Pro Cys Arg Val
 145 150 155 160

Thr Ser Pro Asn Ile Thr Val Thr Leu Lys Lys Phe Pro Leu Asp Thr
 165 170 175

Leu Ile Pro Asp Gly Lys Arg Ile Ile Trp Asp Ser Arg Lys Gly Phe
 180 185 190

Ile Ile Ser Asn Ala Thr Tyr Lys Glu Ile Gly Leu Leu Thr Cys Glu
 195 200 205

Ala Thr Val Asn Gly His Leu Tyr Lys Thr Asn Tyr Leu Thr His Arg
 210 215 220

Gln Thr Asn Thr Ile Ile Asp Val Gln Ile Ser Thr Pro Arg Pro Val
 225 230 235 240

Lys Leu Leu Arg Gly His Thr Leu Val Leu Asn Cys Thr Ala Thr Thr
 245 250 255

Pro Leu Asn Thr Arg Val Gln Met Thr Trp Ser Tyr Pro Asp Glu Lys
 260 265 270

Asn Lys Arg Ala Ser Val Arg Arg Arg Ile Asp Gln Ser Asn Ser His

| 275 | | | | | 280 | | | | | 285 | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Ala | Asn | Ile | Phe | Tyr | Ser | Val | Leu | Thr | Ile | Asp | Lys | Met | Gln | Asn | Lys | |
| 290 | | | | | 295 | | | | | 300 | | | | | | |
| Asp | Lys | Gly | Leu | Tyr | Thr | Cys | Arg | Val | Arg | Ser | Gly | Pro | Ser | Phe | Lys | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| Ser | Val | Asn | Thr | Ser | Val | His | Ile | Tyr | Asp | Lys | Ala | Gly | Pro | Gly | Glu | |
| 325 | | | | | 330 | | | | | 335 | | | | | | |
| Pro | Lys | Ser | Cys | Asp | Lys | Thr | His | Thr | Cys | Pro | Pro | Cys | Pro | Ala | Pro | |
| 340 | | | | | 345 | | | | | 350 | | | | | | |
| Glu | Leu | Leu | Gly | Gly | Pro | Ser | Val | Phe | Leu | Phe | Pro | Pro | Lys | Pro | Lys | |
| 355 | | | | | 360 | | | | | 365 | | | | | | |
| Asp | Thr | Leu | Met | Ile | Ser | Arg | Thr | Pro | Glu | Val | Thr | Cys | Val | Val | Val | |
| 370 | | | | | 375 | | | | | 380 | | | | | | |
| Asp | Val | Ser | His | Glu | Asp | Pro | Glu | Val | Lys | Phe | Asn | Trp | Tyr | Val | Asp | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| Gly | Val | Glu | Val | His | Asn | Ala | Lys | Thr | Lys | Pro | Arg | Glu | Glu | Gln | Tyr | |
| 405 | | | | | 410 | | | | | 415 | | | | | | |
| Asn | Ser | Thr | Tyr | Arg | Val | Val | Ser | Val | Leu | Thr | Val | Leu | His | Gln | Asp | |
| 420 | | | | | 425 | | | | | 430 | | | | | | |
| Trp | Leu | Asn | Gly | Lys | Glu | Tyr | Lys | Cys | Lys | Val | Ser | Asn | Lys | Ala | Leu | |
| 435 | | | | | 440 | | | | | 445 | | | | | | |
| Pro | Ala | Pro | Ile | Glu | Lys | Thr | Ile | Ser | Lys | Ala | Lys | Gly | Gln | Pro | Arg | |
| 450 | | | | | 455 | | | | | 460 | | | | | | |
| Glu | Pro | Gln | Val | Tyr | Thr | Leu | Pro | Pro | Ser | Arg | Asp | Glu | Leu | Thr | Lys | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| Asn | Gln | Val | Ser | Leu | Thr | Cys | Leu | Val | Lys | Gly | Phe | Tyr | Pro | Ser | Asp | |
| 485 | | | | | 490 | | | | | 495 | | | | | | |
| Ile | Ala | Val | Glu | Trp | Glu | Ser | Asn | Gly | Gln | Pro | Glu | Asn | Asn | Tyr | Lys | |
| 500 | | | | | 505 | | | | | 510 | | | | | | |

Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser
515 520 525

Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser
530 535 540

Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
545 550 555 560

Leu Ser Leu Ser Pro Gly Lys
565

<210> 13

<211> 1674

<212> DNA

<213> Artificial

<220>

<223> Mut 1

<220>

<221> CDS

<222> (1) .. (1674)

<400> 13

| | |
|-----------------------------------------------------------------|----|
| atg gtc agc tac tgg gac acc ggg gtc ctg ctg tgc gcg ctg ctc agc | 48 |
| Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu Leu Ser | |
| 1 5 10 15 | |

| | |
|-----------------------------------------------------------------|----|
| tgt ctg ctt ctc aca gga tct agt tca ggt tca aaa tta aaa gat cct | 96 |
| Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Ser Lys Leu Lys Asp Pro | |
| 20 25 30 | |

| | |
|-----------------------------------------------------------------|-----|
| gaa ctg agt tta aaa ggc acc cag cac atc atg caa gca ggc cag aca | 144 |
| Glu Leu Ser Leu Lys Gly Thr Gln His Ile Met Gln Ala Gly Gln Thr | |
| 35 40 45 | |

| | |
|-----------------------------------------------------------------|-----|
| ctg cat ctc caa tgc agg ggg gaa gca gcc cat aaa tgg tct ttg cct | 192 |
| Leu His Leu Gln Cys Arg Gly Glu Ala Ala His Lys Trp Ser Leu Pro | |
| 50 55 60 | |

| | |
|-----------------------------------------------------------------|-----|
| gaa atg gtg agt aag gaa agc gaa agg ctg agc ata act aaa tct gcc | 240 |
| Glu Met Val Ser Lys Glu Ser Glu Arg Leu Ser Ile Thr Lys Ser Ala | |
| 65 70 75 80 | |

| | |
|-----------------------------------------------------------------|-----|
| tgt gga aga aat ggc aaa caa ttc tgc agt act tta acc ttg aac aca | 288 |
| Cys Gly Arg Asn Gly Lys Gln Phe Cys Ser Thr Leu Thr Leu Asn Thr | |
| 85 90 95 | |
| gct caa gca aac cac act ggc ttc tac agc tgc aaa tat cta gct gta | 336 |
| Ala Gln Ala Asn His Thr Gly Phe Tyr Ser Cys Lys Tyr Leu Ala Val | |
| 100 105 110 | |
| cct act tca aag aag aag gaa aca gaa tct gca atc tat ata ttt att | 384 |
| Pro Thr Ser Lys Lys Lys Glu Thr Glu Ser Ala Ile Tyr Ile Phe Ile | |
| 115 120 125 | |
| agt gat aca ggt aga cct ttc gta gag atg tac agt gaa atc ccc gaa | 432 |
| Ser Asp Thr Gly Arg Pro Phe Val Glu Met Tyr Ser Glu Ile Pro Glu | |
| 130 135 140 | |
| att ata cac atg act gaa gga agg gag ctc gtc att ccc tgc cgg gtt | 480 |
| Ile Ile His Met Thr Glu Gly Arg Glu Leu Val Ile Pro Cys Arg Val | |
| 145 150 155 160 | |
| acg tca cct aac atc act gtt act tta aaa aag ttt cca ctt gac act | 528 |
| Thr Ser Pro Asn Ile Thr Val Thr Leu Lys Lys Phe Pro Leu Asp Thr | |
| 165 170 175 | |
| ttg atc cct gat gga aaa cgc ata atc tgg gac agt aga aag ggc ttc | 576 |
| Leu Ile Pro Asp Gly Lys Arg Ile Ile Trp Asp Ser Arg Lys Gly Phe | |
| 180 185 190 | |
| atc ata tca aat gca acg tac aaa gaa ata ggg ctt ctg acc tgt gaa | 624 |
| Ile Ile Ser Asn Ala Thr Tyr Lys Glu Ile Gly Leu Leu Thr Cys Glu | |
| 195 200 205 | |
| gca aca gtc aat ggg cat ttg tat aag aca aac tat ctc aca cat cga | 672 |
| Ala Thr Val Asn Gly His Leu Tyr Lys Thr Asn Tyr Leu Thr His Arg | |
| 210 215 220 | |
| caa acc aat aca atc ata gat gtc caa ata agc aca cca cgc cca gtc | 720 |
| Gln Thr Asn Thr Ile Ile Asp Val Gln Ile Ser Thr Pro Arg Pro Val | |
| 225 230 235 240 | |
| aaa tta ctt aga ggc cat act ctt gtc ctc aat tgt act gct acc act | 768 |
| Lys Leu Leu Arg Gly His Thr Leu Val Leu Asn Cys Thr Ala Thr Thr | |
| 245 250 255 | |
| ccc ttg aac acg aga gtt caa atg acc tgg agt tac cct gat gaa att | 816 |
| Pro Leu Asn Thr Arg Val Gln Met Thr Trp Ser Tyr Pro Asp Glu Ile | |
| 260 265 270 | |
| gac caa agc aat tcc cat gcc aac ata ttc tac agt gtt ctt act att | 864 |
| Asp Gln Ser Asn Ser His Ala Asn Ile Phe Tyr Ser Val Leu Thr Ile | |
| 275 280 285 | |
| gac aaa atg cag aac aaa gac aaa gga ctt tat act tgt cgt gta agg | 912 |
| Asp Lys Met Gln Asn Lys Asp Lys Gly Leu Tyr Thr Cys Arg Val Arg | |
| 290 295 300 | |
| agt gga cca tca ttc aaa tct gtt aac acc tca gtg cat ata tat gat | 960 |
| Ser Gly Pro Ser Phe Lys Ser Val Asn Thr Ser Val His Ile Tyr Asp | |

| 305 | 310 | 315 | 320 | |
|------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|------|
| aaa gca ggc ccg ggc gag ccc aaa tct tgt gac aaa act cac aca tgc Lys Ala Gly Pro Gly Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys | 325 | 330 | 335 | 1008 |
| cca ccg tgc cca gca cct gaa ctc ctg ggg gga ccg tca gtc ttc ctc Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu | 340 | 345 | 350 | 1056 |
| ttc ccc cca aaa ccc aag gac acc ctc atg atc tcc cgg acc cct gag Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu | 355 | 360 | 365 | 1104 |
| gtc aca tgc gtg gtg gtg gac gtg agc cac gaa gac cct gag gtc aag Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys | 370 | 375 | 380 | 1152 |
| ttc aac tgg tac gtg gac ggc gtg gag gtg cat aat gcc aag aca aag Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys | 385 | 390 | 395 | 1200 |
| ccg cgg gag gag cag tac aac agc acg tac cgt gtg gtc agc gtc ctc Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu | 405 | 410 | 415 | 1248 |
| acc gtc ctg cac cag gac tgg ctg aat ggc aag gag tac aag tgc aag Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys | 420 | 425 | 430 | 1296 |
| gtc tcc aac aaa gcc ctc cca gcc ccc atc gag aaa acc atc tcc aaa Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys | 435 | 440 | 445 | 1344 |
| gcc aaa ggg cag ccc cga gaa cca cag gtg tac acc ctg ccc cca tcc Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser | 450 | 455 | 460 | 1392 |
| cgg gat gag ctg acc aag aac cag gtc agc ctg acc tgc ctg gtc aaa Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys | 465 | 470 | 475 | 1440 |
| ggc ttc tat ccc agc gac atc gcc gtg gag tgg gag agc aat ggg cag Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln | 485 | 490 | 495 | 1488 |
| ccg gag aac aac tac aag acc acg cct ccc gtg ctg gac tcc gac ggc Pro Glu Asn Asn Tyr Lys Thr Thr Pro Val Leu Asp Ser Asp Gly | 500 | 505 | 510 | 1536 |
| tcc ttc ttc ctc tac agc aag ctc acc gtg gac aag agc agg tgg cag Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln | 515 | 520 | 525 | 1584 |
| cag ggg aac gtc ttc tca tgc tcc gtg atg cat gag gct ctg cac aac Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn | 530 | 535 | 540 | 1632 |

cac tac acg cag aag agc ctc tcc ctg tct ccg ggt aaa tga
 His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
 545 550 555

1674

<210> 14

<211> 557

<212> PRT

<213> Artificial

<400> 14

Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu Leu Ser
 1 5 10 15

Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Ser Lys Leu Lys Asp Pro
 20 25 30

Glu Leu Ser Leu Lys Gly Thr Gln His Ile Met Gln Ala Gly Gln Thr
 35 40 45

Leu His Leu Gln Cys Arg Gly Glu Ala Ala His Lys Trp Ser Leu Pro
 50 55 60

Glu Met Val Ser Lys Glu Ser Glu Arg Leu Ser Ile Thr Lys Ser Ala
 65 70 75 80

Cys Gly Arg Asn Gly Lys Gln Phe Cys Ser Thr Leu Thr Leu Asn Thr
 85 90 95

Ala Gln Ala Asn His Thr Gly Phe Tyr Ser Cys Lys Tyr Leu Ala Val
 100 105 110

Pro Thr Ser Lys Lys Lys Glu Thr Glu Ser Ala Ile Tyr Ile Phe Ile
 115 120 125

Ser Asp Thr Gly Arg Pro Phe Val Glu Met Tyr Ser Glu Ile Pro Glu
 130 135 140

Ile Ile His Met Thr Glu Gly Arg Glu Leu Val Ile Pro Cys Arg Val
 145 150 155 160

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Ser | Pro | Asn | Ile | Thr | Val | Thr | Leu | Lys | Lys | Phe | Pro | Leu | Asp | Thr | 165 | 170 | 175 | |
| Leu | Ile | Pro | Asp | Gly | Lys | Arg | Ile | Ile | Trp | Asp | Ser | Arg | Lys | Gly | Phe | 180 | 185 | 190 | |
| Ile | Ile | Ser | Asn | Ala | Thr | Tyr | Lys | Glu | Ile | Gly | Leu | Leu | Thr | Cys | Glu | 195 | 200 | 205 | |
| Ala | Thr | Val | Asn | Gly | His | Leu | Tyr | Lys | Thr | Asn | Tyr | Leu | Thr | His | Arg | 210 | 215 | 220 | |
| Gln | Thr | Asn | Thr | Ile | Ile | Asp | Val | Gln | Ile | Ser | Thr | Pro | Arg | Pro | Val | 225 | 230 | 235 | 240 |
| Lys | Leu | Leu | Arg | Gly | His | Thr | Leu | Val | Leu | Asn | Cys | Thr | Ala | Thr | Thr | 245 | 250 | 255 | |
| Pro | Leu | Asn | Thr | Arg | Val | Gln | Met | Thr | Trp | Ser | Tyr | Pro | Asp | Glu | Ile | 260 | 265 | 270 | |
| Asp | Gln | Ser | Asn | Ser | His | Ala | Asn | Ile | Phe | Tyr | Ser | Val | Leu | Thr | Ile | 275 | 280 | 285 | |
| Asp | Lys | Met | Gln | Asn | Lys | Asp | Lys | Gly | Leu | Tyr | Thr | Cys | Arg | Val | Arg | 290 | 295 | 300 | |
| Ser | Gly | Pro | Ser | Phe | Lys | Ser | Val | Asn | Thr | Ser | Val | His | Ile | Tyr | Asp | 305 | 310 | 315 | 320 |
| Lys | Ala | Gly | Pro | Gly | Glu | Pro | Lys | Ser | Cys | Asp | Lys | Thr | His | Thr | Cys | 325 | 330 | 335 | |
| Pro | Pro | Cys | Pro | Ala | Pro | Glu | Leu | Leu | Gly | Gly | Pro | Ser | Val | Phe | Leu | 340 | 345 | 350 | |
| Phe | Pro | Pro | Lys | Pro | Lys | Asp | Thr | Leu | Met | Ile | Ser | Arg | Thr | Pro | Glu | 355 | 360 | 365 | |
| Val | Thr | Cys | Val | Val | Val | Asp | Val | Ser | His | Glu | Asp | Pro | Glu | Val | Lys | 370 | 375 | 380 | |
| Phe | Asn | Trp | Tyr | Val | Asp | Gly | Val | Glu | Val | His | Asn | Ala | Lys | Thr | Lys | 385 | 390 | 395 | 400 |

Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu
405 410 415

Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
420 425 430

Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys
435 440 445

Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
450 455 460

Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys
465 470 475 480

Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
485 490 495

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly
500 505 510

Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln
515 520 525

Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
530 535 540

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
545 550 555

<210> 15

<211> 1359

<212> DNA

<213> Artificial

<220>

<223> Mut2

<220>

<221> CDS

<222> (1) .. (1359)

<400> 15

| | |
|-----------------------------------------------------------------|-----|
| atg gtc agc tac tgg gac acc ggg gtc ctg ctg tgc gcg ctg ctc agc | 48 |
| Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu Leu Ser | |
| 1 5 10 15 | |
| tgt ctg ctt ctc aca gga tct agt tcc gga ggt aga cct ttc gta gag | 96 |
| Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Gly Arg Pro Phe Val Glu | |
| 20 25 30 | |
| atg tac agt gaa atc ccc gaa att ata cac atg act gaa gga agg gag | 144 |
| Met Tyr Ser Glu Ile Pro Glu Ile Ile His Met Thr Glu Gly Arg Glu | |
| 35 40 45 | |
| ctc gtc att ccc tgc cgg gtt acg tca cct aac atc act gtt act tta | 192 |
| Leu Val Ile Pro Cys Arg Val Thr Ser Pro Asn Ile Thr Val Thr Leu | |
| 50 55 60 | |
| aaa aag ttt cca ctt gac act ttg atc cct gat gga aaa cgc ata atc | 240 |
| Lys Lys Phe Pro Leu Asp Thr Leu Ile Pro Asp Gly Lys Arg Ile Ile | |
| 65 70 75 80 | |
| tgg gac agt aga aag ggc ttc atc ata tca aat gca acg tac aaa gaa | 288 |
| Trp Asp Ser Arg Lys Gly Phe Ile Ile Ser Asn Ala Thr Tyr Lys Glu | |
| 85 90 95 | |
| ata ggg ctt ctg acc tgt gaa gca aca gtc aat ggg cat ttg tat aag | 336 |
| Ile Gly Leu Leu Thr Cys Glu Ala Thr Val Asn Gly His Leu Tyr Lys | |
| 100 105 110 | |
| aca aac tat ctc aca cat cga caa acc aat aca atc ata gat gtc caa | 384 |
| Thr Asn Tyr Leu Thr His Arg Gln Thr Asn Thr Ile Ile Asp Val Gln | |
| 115 120 125 | |
| ata agc aca cca cgc cca gtc aaa tta ctt aga ggc cat act ctt gtc | 432 |
| Ile Ser Thr Pro Arg Pro Val Lys Leu Leu Arg Gly His Thr Leu Val | |
| 130 135 140 | |
| ctc aat tgt act gct acc act ccc ttg aac acg aga gtt caa atg acc | 480 |
| Leu Asn Cys Thr Ala Thr Thr Pro Leu Asn Thr Arg Val Gln Met Thr | |
| 145 150 155 160 | |
| tgg agt tac cct gat gaa att gac caa agc aat tcc cat gcc aac ata | 528 |
| Trp Ser Tyr Pro Asp Glu Ile Asp Gln Ser Asn Ser His Ala Asn Ile | |
| 165 170 175 | |
| ttc tac agt gtt ctt act att gac aaa atg cag aac aaa gac aaa gga | 576 |
| Phe Tyr Ser Val Leu Thr Ile Asp Lys Met Gln Asn Lys Asp Lys Gly | |
| 180 185 190 | |
| ctt tat act tgt cgt gta agg agt gga cca tca ttc aaa tct gtt aac | 624 |
| Leu Tyr Thr Cys Arg Val Arg Ser Gly Pro Ser Phe Lys Ser Val Asn | |
| 195 200 205 | |
| acc tca gtg cat ata tat gat aaa gca ggc ccg ggc gag ccc aaa tct | 672 |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Thr | Ser | Val | His | Ile | Tyr | Asp | Lys | Ala | Gly | Pro | Gly | Glu | Pro | Lys | Ser | | |
| 210 | | | | | | 215 | | | | | 220 | | | | | | |
| tgt | gac | aaa | act | cac | aca | tgc | cca | ccg | tgc | cca | gca | cct | gaa | ctc | ctg | 720 | |
| Cys | Asp | Lys | Thr | His | Thr | Cys | Pro | Pro | Cys | Pro | Ala | Pro | Glu | Leu | Leu | 240 | |
| 225 | | | | | 230 | | | | 235 | | | | | | | | |
| ggg | gga | ccg | tca | gtc | ttc | ctc | ttc | ccc | cca | aaa | ccc | aag | gac | acc | ctc | 768 | |
| Gly | Gly | Pro | Ser | Val | Phe | Leu | Phe | Pro | Pro | Lys | Pro | Lys | Asp | Thr | Leu | 255 | |
| | | | | 245 | | | | 250 | | | | | | | | | |
| atg | atc | tcc | cgg | acc | cct | gag | gtc | aca | tgc | gtg | gtg | gtg | gac | gtg | agc | 816 | |
| Met | Ile | Ser | Arg | Thr | Pro | Glu | Val | Thr | Cys | Val | Val | Val | Asp | Val | Ser | 270 | |
| | | | 260 | | | | | 265 | | | | | | | | | |
| cac | gaa | gac | cct | gag | gtc | aag | ttc | aac | tgg | tac | gtg | gac | ggc | gtg | gag | 864 | |
| His | Glu | Asp | Pro | Glu | Val | Lys | Phe | Asn | Trp | Tyr | Val | Asp | Gly | Val | Glu | 285 | |
| | | 275 | | | | | 280 | | | | | | | | | | |
| gtg | cat | aat | gcc | aag | aca | aag | ccg | cgg | gag | gag | cag | tac | aac | agc | acg | 912 | |
| Val | His | Asn | Ala | Lys | Thr | Lys | Pro | Arg | Glu | Glu | Gln | Tyr | Asn | Ser | Thr | 300 | |
| | 290 | | | | | 295 | | | | | | | | | | | |
| tac | cgt | gtg | gtc | agc | gtc | ctc | acc | gtc | ctg | cac | cag | gac | tgg | ctg | aat | 960 | |
| Tyr | Arg | Val | Val | Ser | Val | Leu | Thr | Val | Leu | His | Gln | Asp | Trp | Leu | Asn | 320 | |
| 305 | | | | | 310 | | | | | 315 | | | | | | | |
| ggc | aag | gag | tac | aag | tgc | aag | gtc | tcc | aac | aaa | gcc | ctc | cca | gcc | ccc | 1008 | |
| Gly | Lys | Glu | Tyr | Lys | Cys | Lys | Val | Ser | Asn | Lys | Ala | Leu | Pro | Ala | Pro | 335 | |
| | | | | 325 | | | | | 330 | | | | | | | | |
| atc | gag | aaa | acc | atc | tcc | aaa | gcc | aaa | ggg | cag | ccc | cga | gaa | cca | cag | 1056 | |
| Ile | Glu | Lys | Thr | Ile | Ser | Lys | Ala | Lys | Gly | Gln | Pro | Arg | Glu | Pro | Gln | 350 | |
| | | | 340 | | | | | 345 | | | | | | | | | |
| gtg | tac | acc | ctg | ccc | cca | tcc | cgg | gat | gag | ctg | acc | aag | aac | cag | gtc | 1104 | |
| Val | Tyr | Thr | Leu | Pro | Pro | Ser | Arg | Asp | Glu | Leu | Thr | Lys | Asn | Gln | Val | 365 | |
| | | 355 | | | | | 360 | | | | | | | | | | |
| agc | ctg | acc | tgc | ctg | gtc | aaa | ggc | ttc | tat | ccc | agc | gac | atc | gcc | gtg | 1152 | |
| Ser | Leu | Thr | Cys | Leu | Val | Lys | Gly | Phe | Tyr | Pro | Ser | Asp | Ile | Ala | Val | 380 | |
| | 370 | | | | | 375 | | | | | | | | | | | |
| gag | tgg | gag | agc | aat | ggg | cag | ccg | gag | aac | aac | tac | aag | acc | acg | cct | 1200 | |
| Glu | Trp | Glu | Ser | Asn | Gly | Gln | Pro | Glu | Asn | Asn | Tyr | Lys | Thr | Thr | Pro | 400 | |
| 385 | | | | | 390 | | | | | 395 | | | | | | | |
| ccc | gtg | ctg | gac | tcc | gac | ggc | tcc | ttc | ttc | ctc | tac | agc | aag | ctc | acc | 1248 | |
| Pro | Val | Leu | Asp | Ser | Asp | Gly | Ser | Phe | Phe | Leu | Tyr | Ser | Lys | Leu | Thr | 415 | |
| | | | | 405 | | | | | 410 | | | | | | | | |
| gtg | gac | aag | agc | agg | tgg | cag | cag | ggg | aac | gtc | ttc | tca | tgc | tcc | gtg | 1296 | |
| Val | Asp | Lys | Ser | Arg | Trp | Gln | Gln | Gly | Asn | Val | Phe | Ser | Cys | Ser | Val | 430 | |
| | | | 420 | | | | | 425 | | | | | | | | | |
| atg | cat | gag | gct | ctg | cac | aac | cac | tac | acg | cag | aag | agc | ctc | tcc | ctg | 1344 | |
| Met | His | Glu | Ala | Leu | His | Asn | His | Tyr | Thr | Gln | Lys | Ser | Leu | Ser | Leu | 445 | |
| | | 435 | | | | | 440 | | | | | | | | | | |

tct ccg ggt aaa tga
 Ser Pro Gly Lys
 450

1359

<210> 16

<211> 452

<212> PRT

<213> Artificial

<400> 16

Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu Leu Ser
 1 5 10 15

Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Gly Arg Pro Phe Val Glu
 20 25 30

Met Tyr Ser Glu Ile Pro Glu Ile Ile His Met Thr Glu Gly Arg Glu
 35 40 45

Leu Val Ile Pro Cys Arg Val Thr Ser Pro Asn Ile Thr Val Thr Leu
 50 55 60

Lys Lys Phe Pro Leu Asp Thr Leu Ile Pro Asp Gly Lys Arg Ile Ile
 65 70 75 80

Trp Asp Ser Arg Lys Gly Phe Ile Ile Ser Asn Ala Thr Tyr Lys Glu
 85 90 95

Ile Gly Leu Leu Thr Cys Glu Ala Thr Val Asn Gly His Leu Tyr Lys
 100 105 110

Thr Asn Tyr Leu Thr His Arg Gln Thr Asn Thr Ile Ile Asp Val Gln
 115 120 125

Ile Ser Thr Pro Arg Pro Val Lys Leu Leu Arg Gly His Thr Leu Val
 130 135 140

Leu Asn Cys Thr Ala Thr Thr Pro Leu Asn Thr Arg Val Gln Met Thr
 145 150 155 160

Trp Ser Tyr Pro Asp Glu Ile Asp Gln Ser Asn Ser His Ala Asn Ile

| 165 | | | | | | | | 170 | | | | 175 | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Tyr | Ser | Val | Leu | Thr | Ile | Asp | Lys | Met | Gln | Asn | Lys | Asp | Lys | Gly |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Leu | Tyr | Thr | Cys | Arg | Val | Arg | Ser | Gly | Pro | Ser | Phe | Lys | Ser | Val | Asn |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Thr | Ser | Val | His | Ile | Tyr | Asp | Lys | Ala | Gly | Pro | Gly | Glu | Pro | Lys | Ser |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Cys | Asp | Lys | Thr | His | Thr | Cys | Pro | Pro | Cys | Pro | Ala | Pro | Glu | Leu | Leu |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Gly | Gly | Pro | Ser | Val | Phe | Leu | Phe | Pro | Pro | Lys | Pro | Lys | Asp | Thr | Leu |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Met | Ile | Ser | Arg | Thr | Pro | Glu | Val | Thr | Cys | Val | Val | Val | Asp | Val | Ser |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| His | Glu | Asp | Pro | Glu | Val | Lys | Phe | Asn | Trp | Tyr | Val | Asp | Gly | Val | Glu |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Val | His | Asn | Ala | Lys | Thr | Lys | Pro | Arg | Glu | Glu | Gln | Tyr | Asn | Ser | Thr |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Tyr | Arg | Val | Val | Ser | Val | Leu | Thr | Val | Leu | His | Gln | Asp | Trp | Leu | Asn |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Gly | Lys | Glu | Tyr | Lys | Cys | Lys | Val | Ser | Asn | Lys | Ala | Leu | Pro | Ala | Pro |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Ile | Glu | Lys | Thr | Ile | Ser | Lys | Ala | Lys | Gly | Gln | Pro | Arg | Glu | Pro | Gln |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Val | Tyr | Thr | Leu | Pro | Pro | Ser | Arg | Asp | Glu | Leu | Thr | Lys | Asn | Gln | Val |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Ser | Leu | Thr | Cys | Leu | Val | Lys | Gly | Phe | Tyr | Pro | Ser | Asp | Ile | Ala | Val |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Glu | Trp | Glu | Ser | Asn | Gly | Gln | Pro | Glu | Asn | Asn | Tyr | Lys | Thr | Thr | Pro |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr
405 410 415

Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val
420 425 430

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
435 440 445

Ser Pro Gly Lys
450

<210> 17

<211> 1389

<212> DNA

<213> Artificial

<220>

<223> Mut3

<220>

<221> CDS

<222> (1) .. (1389)

<400> 17

| | |
|-----------------------------------------------------------------|----|
| atg gtc agc tac tgg gac acc ggg gtc ctg ctg tgc gcg ctg ctc agc | 48 |
| Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu Leu Ser | |
| 1 5 10 15 | |

| | |
|-----------------------------------------------------------------|----|
| tgt ctg ctt ctc aca gga tct agt tcc gga ggt aga cct ttc gta gag | 96 |
| Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Gly Arg Pro Phe Val Glu | |
| 20 25 30 | |

| | |
|-----------------------------------------------------------------|-----|
| atg tac agt gaa atc ccc gaa att ata cac atg act gaa gga agg gag | 144 |
| Met Tyr Ser Glu Ile Pro Glu Ile Ile His Met Thr Glu Gly Arg Glu | |
| 35 40 45 | |

| | |
|-----------------------------------------------------------------|-----|
| ctc gtc att ccc tgc cgg gtt acg tca cct aac atc act gtt act tta | 192 |
| Leu Val Ile Pro Cys Arg Val Thr Ser Pro Asn Ile Thr Val Thr Leu | |
| 50 55 60 | |

| | |
|-----------------------------------------------------------------|-----|
| aaa aag ttt cca ctt gac act ttg atc cct gat gga aaa cgc ata atc | 240 |
| Lys Lys Phe Pro Leu Asp Thr Leu Ile Pro Asp Gly Lys Arg Ile Ile | |
| 65 70 75 80 | |

| | |
|-----------------------------------------------------------------|-----|
| tgg gac agt aga aag ggc ttc atc ata tca aat gca acg tac aaa gaa | 288 |
| Trp Asp Ser Arg Lys Gly Phe Ile Ile Ser Asn Ala Thr Tyr Lys Glu | |
| 85 90 95 | |
| ata ggg ctt ctg acc tgt gaa gca aca gtc aat ggg cat ttg tat aag | 336 |
| Ile Gly Leu Leu Thr Cys Glu Ala Thr Val Asn Gly His Leu Tyr Lys | |
| 100 105 110 | |
| aca aac tat ctc aca cat cga caa acc aat aca atc ata gat gtc caa | 384 |
| Thr Asn Tyr Leu Thr His Arg Gln Thr Asn Thr Ile Ile Asp Val Gln | |
| 115 120 125 | |
| ata agc aca cca cgc cca gtc aaa tta ctt aga ggc cat act ctt gtc | 432 |
| Ile Ser Thr Pro Arg Pro Val Lys Leu Leu Arg Gly His Thr Leu Val | |
| 130 135 140 | |
| ctc aat tgt act gct acc act ccc ttg aac acg aga gtt caa atg acc | 480 |
| Leu Asn Cys Thr Ala Thr Thr Pro Leu Asn Thr Arg Val Gln Met Thr | |
| 145 150 155 160 | |
| tgg agt tac cct gat gaa aaa aat aag aga gct tcc gta agg cga cga | 528 |
| Trp Ser Tyr Pro Asp Glu Lys Asn Lys Arg Ala Ser Val Arg Arg Arg | |
| 165 170 175 | |
| att gac caa agc aat tcc cat gcc aac ata ttc tac agt gtt ctt act | 576 |
| Ile Asp Gln Ser Asn Ser His Ala Asn Ile Phe Tyr Ser Val Leu Thr | |
| 180 185 190 | |
| att gac aaa atg cag aac aaa gac aaa gga ctt tat act tgt cgt gta | 624 |
| Ile Asp Lys Met Gln Asn Lys Asp Lys Gly Leu Tyr Thr Cys Arg Val | |
| 195 200 205 | |
| agg agt gga cca tca ttc aaa tct gtt aac acc tca gtg cat ata tat | 672 |
| Arg Ser Gly Pro Ser Phe Lys Ser Val Asn Thr Ser Val His Ile Tyr | |
| 210 215 220 | |
| gat aaa gca ggc ccg ggc gag ccc aaa tct tgt gac aaa act cac aca | 720 |
| Asp Lys Ala Gly Pro Gly Glu Pro Lys Ser Cys Asp Lys Thr His Thr | |
| 225 230 235 240 | |
| tgc cca ccg tgc cca gca cct gaa ctc ctg ggg gga ccg tca gtc ttc | 768 |
| Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe | |
| 245 250 255 | |
| ctc ttc ccc cca aaa ccc aag gac acc ctc atg atc tcc cgg acc cct | 816 |
| Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro | |
| 260 265 270 | |
| gag gtc aca tgc gtg gtg gtg gac gtg agc cac gaa gac cct gag gtc | 864 |
| Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val | |
| 275 280 285 | |
| aag ttc aac tgg tac gtg gac ggc gtg gag gtg cat aat gcc aag aca | 912 |
| Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr | |
| 290 295 300 | |

| | |
|-----------------------------------------------------------------|------|
| aag ccg cgg gag gag cag tac aac agc acg tac cgt gtg gtc agc gtc | 960 |
| Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val | |
| 305 310 315 320 | |
| | |
| ctc acc gtc ctg cac cag gac tgg ctg aat ggc aag gag tac aag tgc | 1008 |
| Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys | |
| 325 330 335 | |
| | |
| aag gtc tcc aac aaa gcc ctc cca gcc ccc atc gag aaa acc atc tcc | 1056 |
| Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser | |
| 340 345 350 | |
| | |
| aaa gcc aaa ggg cag ccc cga gaa cca cag gtg tac acc ctg ccc cca | 1104 |
| Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro | |
| 355 360 365 | |
| | |
| tcc cgg gat gag ctg acc aag aac cag gtc agc ctg acc tgc ctg gtc | 1152 |
| Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val | |
| 370 375 380 | |
| | |
| aaa ggc ttc tat ccc agc gac atc gcc gtg gag tgg gag agc aat ggg | 1200 |
| Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly | |
| 385 390 395 400 | |
| | |
| cag ccg gag aac aac tac aag acc acg cct ccc gtg ctg gac tcc gac | 1248 |
| Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp | |
| 405 410 415 | |
| | |
| ggc tcc ttc ttc ctc tac agc aag ctc acc gtg gac aag agc agg tgg | 1296 |
| Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp | |
| 420 425 430 | |
| | |
| cag cag ggg aac gtc ttc tca tgc tcc gtg atg cat gag gct ctg cac | 1344 |
| Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His | |
| 435 440 445 | |
| | |
| aac cac tac acg cag aag agc ctc tcc ctg tct ccg ggt aaa tga | 1389 |
| Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys | |
| 450 455 460 | |

<210> 18

<211> 462

<212> PRT

<213> Artificial

<400> 18

| |
|-----------------------------------------------------------------|
| Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu Leu Ser |
| 1 5 10 15 |

Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Gly Arg Pro Phe Val Glu
 20 25 30

Met Tyr Ser Glu Ile Pro Glu Ile Ile His Met Thr Glu Gly Arg Glu
 35 40 45

Leu Val Ile Pro Cys Arg Val Thr Ser Pro Asn Ile Thr Val Thr Leu
 50 55 60

Lys Lys Phe Pro Leu Asp Thr Leu Ile Pro Asp Gly Lys Arg Ile Ile
 65 70 75 80

Trp Asp Ser Arg Lys Gly Phe Ile Ile Ser Asn Ala Thr Tyr Lys Glu
 85 90 95

Ile Gly Leu Leu Thr Cys Glu Ala Thr Val Asn Gly His Leu Tyr Lys
 100 105 110

Thr Asn Tyr Leu Thr His Arg Gln Thr Asn Thr Ile Ile Asp Val Gln
 115 120 125

Ile Ser Thr Pro Arg Pro Val Lys Leu Leu Arg Gly His Thr Leu Val
 130 135 140

Leu Asn Cys Thr Ala Thr Thr Pro Leu Asn Thr Arg Val Gln Met Thr
 145 150 155 160

Trp Ser Tyr Pro Asp Glu Lys Asn Lys Arg Ala Ser Val Arg Arg Arg
 165 170 175

Ile Asp Gln Ser Asn Ser His Ala Asn Ile Phe Tyr Ser Val Leu Thr
 180 185 190

Ile Asp Lys Met Gln Asn Lys Asp Lys Gly Leu Tyr Thr Cys Arg Val
 195 200 205

Arg Ser Gly Pro Ser Phe Lys Ser Val Asn Thr Ser Val His Ile Tyr
 210 215 220

Asp Lys Ala Gly Pro Gly Glu Pro Lys Ser Cys Asp Lys Thr His Thr
 225 230 235 240

Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe

<212> DNA

<213> Artificial

<220>

<223> Mut 4

<220>

<221> CDS

<222> (1) .. (1704)

<400> 19

| | |
|-----------------------------------------------------------------|----|
| atg gtc agc tac tgg gac acc ggg gtc ctg ctg tgc gcg ctg ctc agc | 48 |
| Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu Leu Ser | |
| 1 5 10 15 | |

| | |
|-----------------------------------------------------------------|----|
| tgt ctg ctt ctc aca gga tct agt tca ggt tca aaa tta aaa gat cct | 96 |
| Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Ser Lys Leu Lys Asp Pro | |
| 20 25 30 | |

| | |
|-----------------------------------------------------------------|-----|
| gaa ctg agt tta aaa ggc acc cag cac atc atg caa gca ggc cag aca | 144 |
| Glu Leu Ser Leu Lys Gly Thr Gln His Ile Met Gln Ala Gly Gln Thr | |
| 35 40 45 | |

| | |
|-----------------------------------------------------------------|-----|
| ctg cat ctc caa tgc agg ggg gaa gca gcc cat aaa tgg tct ttg cct | 192 |
| Leu His Leu Gln Cys Arg Gly Glu Ala Ala His Lys Trp Ser Leu Pro | |
| 50 55 60 | |

| | |
|-----------------------------------------------------------------|-----|
| gaa atg gtg agt aag gaa agc gaa agg ctg agc ata act aaa tct gcc | 240 |
| Glu Met Val Ser Lys Glu Ser Glu Arg Leu Ser Ile Thr Lys Ser Ala | |
| 65 70 75 80 | |

| | |
|-----------------------------------------------------------------|-----|
| tgt gga aga aat ggc aaa caa ttc tgc agt act tta acc ttg aac aca | 288 |
| Cys Gly Arg Asn Gly Lys Gln Phe Cys Ser Thr Leu Thr Leu Asn Thr | |
| 85 90 95 | |

| | |
|-----------------------------------------------------------------|-----|
| gct caa gca aac cac act ggc ttc tac agc tgc aaa tat cta gct gta | 336 |
| Ala Gln Ala Asn His Thr Gly Phe Tyr Ser Cys Lys Tyr Leu Ala Val | |
| 100 105 110 | |

| | |
|-----------------------------------------------------------------|-----|
| cct act tca aag aag aag gaa aca gaa tct gca atc tat ata ttt att | 384 |
| Pro Thr Ser Lys Lys Lys Glu Thr Glu Ser Ala Ile Tyr Ile Phe Ile | |
| 115 120 125 | |

| | |
|-----------------------------------------------------------------|-----|
| agt gat aca ggt aga cct ttc gta gag atg tac agt gaa atc ccc gaa | 432 |
| Ser Asp Thr Gly Arg Pro Phe Val Glu Met Tyr Ser Glu Ile Pro Glu | |
| 130 135 140 | |

| | |
|-----------------------------------------------------------------|-----|
| att ata cac atg act gaa gga agg gag ctc gtc att ccc tgc cgg gtt | 480 |
|-----------------------------------------------------------------|-----|

| | | | | | | | | | | | | | | | | |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| Ile 145 | Ile | His | Met | Thr | Glu 150 | Gly | Arg | Glu | Leu | Val 155 | Ile | Pro | Cys | Arg | Val 160 | |
| acg Thr | tca Ser | cct Pro | aac Asn | atc Ile | act Thr 165 | gtt Val | act Thr | tta Leu | aaa Lys 170 | aag Lys | ttt Phe | cca Pro | ctt Leu | gac Asp 175 | act Thr | 528 |
| ttg Leu | atc Ile | cct Pro | gat Asp 180 | gga Gly | aaa Lys | cgc Arg | ata Ile | atc Ile 185 | tgg Trp | gac Asp | agt Ser | aga Arg | aag Lys 190 | ggc Gly | ttc Phe | 576 |
| atc Ile | ata Ile | tca Ser 195 | aat Asn | gca Ala | acg Thr | tac Tyr | aaa Lys 200 | gaa Glu | ata Ile | ggg Gly | ctt Leu | ctg Leu 205 | acc Thr | tgt Cys | gaa Glu | 624 |
| gca Ala | aca Thr 210 | gtc Val | aat Asn | ggg Gly | cat His | ttg Leu 215 | tat Tyr | aag Lys | aca Thr | aac Asn | tat Tyr 220 | ctc Leu | aca Thr | cat His | cga Arg | 672 |
| caa Gln 225 | acc Thr | aat Asn | aca Thr | atc Ile | ata Ile 230 | gat Asp | gtc Val | caa Gln | ata Ile | agc Ser 235 | aca Thr | cca Pro | cgc Arg | cca Pro | gtc Val 240 | 720 |
| aaa Lys | tta Leu | ctt Leu | aga Arg | ggc Gly 245 | cat His | act Thr | ctt Leu | gtc Val | ctc Leu 250 | aat Asn | tgt Cys | act Thr | gct Ala | acc Thr 255 | act Thr | 768 |
| ccc Pro | ttg Leu | aac Asn | acg Thr | aga Arg | gtt Val | caa Gln | atg Met | acc Thr | tgg Trp | agt Ser | tac Tyr | cct Pro | gat Asp 270 | gaa Glu | aaa Lys | 816 |
| aat Asn | aag Lys | aac Asn 275 | gct Ala | tcc Ser | gta Val | agg Arg | cga Arg 280 | cga Arg | att Ile | gac Asp | caa Gln | agc Ser 285 | aat Asn | tcc Ser | cat His | 864 |
| gcc Ala 290 | aac Asn | ata Ile | ttc Phe | tac Tyr | agt Ser | gtt Val 295 | ctt Leu | act Thr | att Ile | gac Asp | aaa Lys 300 | atg Met | cag Gln | aac Asn | aaa Lys | 912 |
| gac Asp 305 | aaa Lys | gga Gly | ctt Leu | tat Tyr | act Thr 310 | tgt Cys | cgt Arg | gta Val | agg Arg | agt Ser 315 | gga Gly | cca Pro | tca Ser | ttc Phe | aaa Lys 320 | 960 |
| tct Ser | gtt Val | aac Asn | acc Thr | tca Ser 325 | gtg Val | cat His | ata Ile | tat Tyr | gat Asp 330 | aaa Lys | gca Ala | ggc Gly | ccg Pro | ggc Gly 335 | gag Glu | 1008 |
| ccc Pro | aaa Lys | tct Ser | tgt Cys | gac Asp 340 | aaa Lys | act Thr | cac His | aca Thr 345 | tgc Cys | cca Pro | ccg Pro | tgc Cys | cca Pro 350 | gca Ala | cct Pro | 1056 |
| gaa Glu | ctc Leu | ctg Leu 355 | ggg Gly | gga Gly | ccg Pro | tca Ser | gtc Val 360 | ttc Phe | ctc Leu | ttc Phe | ccc Pro 365 | cca Pro | aaa Lys | ccc Pro | aag Lys | 1104 |
| gac | acc | ctc | atg | atc | tcc | cgg | acc | cct | gag | gtc | aca | tgc | gtg | gtg | gtg | 1152 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Asp | Thr | Leu | Met | Ile | Ser | Arg | Thr | Pro | Glu | Val | Thr | Cys | Val | Val | Val | |
| 370 | | | | | | 375 | | | | | 380 | | | | | |
| gac | gtg | agc | cac | gaa | gac | cct | gag | gtc | aag | ttc | aac | tgg | tac | gtg | gac | 1200 |
| Asp | Val | Ser | His | Glu | Asp | Pro | Glu | Val | Lys | Phe | Asn | Trp | Tyr | Val | Asp | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| ggc | gtg | gag | gtg | cat | aat | gcc | aag | aca | aag | ccg | cgg | gag | gag | cag | tac | 1248 |
| Gly | Val | Glu | Val | His | Asn | Ala | Lys | Thr | Lys | Pro | Arg | Glu | Glu | Gln | Tyr | |
| | | | | 405 | | | | | 410 | | | | | 415 | | |
| aac | agc | acg | tac | cgt | gtg | gtc | agc | gtc | ctc | acc | gtc | ctg | cac | cag | gac | 1296 |
| Asn | Ser | Thr | Tyr | Arg | Val | Val | Ser | Val | Leu | Thr | Val | Leu | His | Gln | Asp | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| tgg | ctg | aat | ggc | aag | gag | tac | aag | tgc | aag | gtc | tcc | aac | aaa | gcc | ctc | 1344 |
| Trp | Leu | Asn | Gly | Lys | Glu | Tyr | Lys | Cys | Lys | Val | Ser | Asn | Lys | Ala | Leu | |
| | | 435 | | | | | 440 | | | | | 445 | | | | |
| cca | gcc | ccc | atc | gag | aaa | acc | atc | tcc | aaa | gcc | aaa | ggg | cag | ccc | cga | 1392 |
| Pro | Ala | Pro | Ile | Glu | Lys | Thr | Ile | Ser | Lys | Ala | Lys | Gly | Gln | Pro | Arg | |
| | 450 | | | | | 455 | | | | | 460 | | | | | |
| gaa | cca | cag | gtg | tac | acc | ctg | ccc | cca | tcc | cgg | gat | gag | ctg | acc | aag | 1440 |
| Glu | Pro | Gln | Val | Tyr | Thr | Leu | Pro | Pro | Ser | Arg | Asp | Glu | Leu | Thr | Lys | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| aac | cag | gtc | agc | ctg | acc | tgc | ctg | gtc | aaa | ggc | ttc | tat | ccc | agc | gac | 1488 |
| Asn | Gln | Val | Ser | Leu | Thr | Cys | Leu | Val | Lys | Gly | Phe | Tyr | Pro | Ser | Asp | |
| | | | | 485 | | | | | 490 | | | | | 495 | | |
| atc | gcc | gtg | gag | tgg | gag | agc | aat | ggg | cag | ccg | gag | aac | aac | tac | aag | 1536 |
| Ile | Ala | Val | Glu | Trp | Glu | Ser | Asn | Gly | Gln | Pro | Glu | Asn | Asn | Tyr | Lys | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| acc | acg | cct | ccc | gtg | ctg | gac | tcc | gac | ggc | tcc | ttc | ttc | ctc | tac | agc | 1584 |
| Thr | Thr | Pro | Pro | Val | Leu | Asp | Ser | Asp | Gly | Ser | Phe | Phe | Leu | Tyr | Ser | |
| | | 515 | | | | | 520 | | | | | 525 | | | | |
| aag | ctc | acc | gtg | gac | aag | agc | agg | tgg | cag | cag | ggg | aac | gtc | ttc | tca | 1632 |
| Lys | Leu | Thr | Val | Asp | Lys | Ser | Arg | Trp | Gln | Gln | Gly | Asn | Val | Phe | Ser | |
| | 530 | | | | | 535 | | | | | 540 | | | | | |
| tgc | tcc | gtg | atg | cat | gag | gct | ctg | cac | aac | cac | tac | acg | cag | aag | agc | 1680 |
| Cys | Ser | Val | Met | His | Glu | Ala | Leu | His | Asn | His | Tyr | Thr | Gln | Lys | Ser | |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| ctc | tcc | ctg | tct | ccg | ggt | aaa | tga | | | | | | | | | 1704 |
| Leu | Ser | Leu | Ser | Pro | Gly | Lys | | | | | | | | | | |
| | | | | 565 | | | | | | | | | | | | |

<210> 20

<211> 567

<212> PRT

<213> Artificial

<400> 20

Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu Leu Ser
1 5 10 15

Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Ser Lys Leu Lys Asp Pro
20 25 30

Glu Leu Ser Leu Lys Gly Thr Gln His Ile Met Gln Ala Gly Gln Thr
35 40 45

Leu His Leu Gln Cys Arg Gly Glu Ala Ala His Lys Trp Ser Leu Pro
50 55 60

Glu Met Val Ser Lys Glu Ser Glu Arg Leu Ser Ile Thr Lys Ser Ala
65 70 75 80

Cys Gly Arg Asn Gly Lys Gln Phe Cys Ser Thr Leu Thr Leu Asn Thr
85 90 95

Ala Gln Ala Asn His Thr Gly Phe Tyr Ser Cys Lys Tyr Leu Ala Val
100 105 110

Pro Thr Ser Lys Lys Lys Glu Thr Glu Ser Ala Ile Tyr Ile Phe Ile
115 120 125

Ser Asp Thr Gly Arg Pro Phe Val Glu Met Tyr Ser Glu Ile Pro Glu
130 135 140

Ile Ile His Met Thr Glu Gly Arg Glu Leu Val Ile Pro Cys Arg Val
145 150 155 160

Thr Ser Pro Asn Ile Thr Val Thr Leu Lys Lys Phe Pro Leu Asp Thr
165 170 175

Leu Ile Pro Asp Gly Lys Arg Ile Ile Trp Asp Ser Arg Lys Gly Phe
180 185 190

Ile Ile Ser Asn Ala Thr Tyr Lys Glu Ile Gly Leu Leu Thr Cys Glu

| 195 | | | | | 200 | | | | | 205 | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Thr | Val | Asn | Gly | His | Leu | Tyr | Lys | Thr | Asn | Tyr | Leu | Thr | His | Arg |
| 210 | | | | | | 215 | | | | | 220 | | | | |
| Gln | Thr | Asn | Thr | Ile | Ile | Asp | Val | Gln | Ile | Ser | Thr | Pro | Arg | Pro | Val |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Lys | Leu | Leu | Arg | Gly | His | Thr | Leu | Val | Leu | Asn | Cys | Thr | Ala | Thr | Thr |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Pro | Leu | Asn | Thr | Arg | Val | Gln | Met | Thr | Trp | Ser | Tyr | Pro | Asp | Glu | Lys |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Asn | Lys | Asn | Ala | Ser | Val | Arg | Arg | Arg | Ile | Asp | Gln | Ser | Asn | Ser | His |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Ala | Asn | Ile | Phe | Tyr | Ser | Val | Leu | Thr | Ile | Asp | Lys | Met | Gln | Asn | Lys |
| 290 | | | | | | 295 | | | | | 300 | | | | |
| Asp | Lys | Gly | Leu | Tyr | Thr | Cys | Arg | Val | Arg | Ser | Gly | Pro | Ser | Phe | Lys |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Ser | Val | Asn | Thr | Ser | Val | His | Ile | Tyr | Asp | Lys | Ala | Gly | Pro | Gly | Glu |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Pro | Lys | Ser | Cys | Asp | Lys | Thr | His | Thr | Cys | Pro | Pro | Cys | Pro | Ala | Pro |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Glu | Leu | Leu | Gly | Gly | Pro | Ser | Val | Phe | Leu | Phe | Pro | Pro | Lys | Pro | Lys |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Asp | Thr | Leu | Met | Ile | Ser | Arg | Thr | Pro | Glu | Val | Thr | Cys | Val | Val | Val |
| 370 | | | | | | 375 | | | | | 380 | | | | |
| Asp | Val | Ser | His | Glu | Asp | Pro | Glu | Val | Lys | Phe | Asn | Trp | Tyr | Val | Asp |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Gly | Val | Glu | Val | His | Asn | Ala | Lys | Thr | Lys | Pro | Arg | Glu | Glu | Gln | Tyr |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Asn | Ser | Thr | Tyr | Arg | Val | Val | Ser | Val | Leu | Thr | Val | Leu | His | Gln | Asp |
| | | | 420 | | | | | 425 | | | | | 430 | | |

Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu
435 440 445

Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg
450 455 460

Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys
465 470 475 480

Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp
485 490 495

Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys
500 505 510

Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser
515 520 525

Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser
530 535 540

Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
545 550 555 560

Leu Ser Leu Ser Pro Gly Lys
565

<210> 21

<211> 1453

<212> DNA

<213> Artificial

<220>

<223> Flt 1 Receptor

<220>

<221> CDS

<222> (69) .. (1442)

<400> 21
aagcttgggc tgcaggtcga tcgactctag aggatcgatc cccgggagag ctggaattcg 60

caaccacc atg gtc agc tac tgg gac acc ggg gtc ctg ctg tgc gcg ctg 110
Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu
1 5 10

ctc agc tgt ctg ctt ctc aca gga tct agt tcc gga ggt aga cct ttc 158
Leu Ser Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Gly Arg Pro Phe
15 20 25 30

gta gag atg tac agt gaa atc ccc gaa att ata cac atg act gaa gga 206
Val Glu Met Tyr Ser Glu Ile Pro Glu Ile Ile His Met Thr Glu Gly
35 40 45

agg gag ctc gtc att ccc tgc cgg gtt acg tca cct aac atc act gtt 254
Arg Glu Leu Val Ile Pro Cys Arg Val Thr Ser Pro Asn Ile Thr Val
50 55 60

act tta aaa aag ttt cca ctt gac act ttg atc cct gat gga aaa cgc 302
Thr Leu Lys Lys Phe Pro Leu Asp Thr Leu Ile Pro Asp Gly Lys Arg
65 70 75

ata atc tgg gac agt aga aag ggc ttc atc ata tca aat gca acg tac 350
Ile Ile Trp Asp Ser Arg Lys Gly Phe Ile Ile Ser Asn Ala Thr Tyr
80 85 90

aaa gaa ata ggg ctt ctg acc tgt gaa gca aca gtc aat ggg cat ttg 398
Lys Glu Ile Gly Leu Leu Thr Cys Glu Ala Thr Val Asn Gly His Leu
95 100 105 110

tat aag aca aac tat ctc aca cat cga caa acc aat aca atc ata gat 446
Tyr Lys Thr Asn Tyr Leu Thr His Arg Gln Thr Asn Thr Ile Ile Asp
115 120 125

gtg gtt ctg agt ccg tct cat gga att gaa cta tct gtt gga gaa aag 494
Val Val Leu Ser Pro Ser His Gly Ile Glu Leu Ser Val Gly Glu Lys
130 135 140

ctt gtc tta aat tgt aca gca aga act gaa cta aat gtg ggg att gac 542
Leu Val Leu Asn Cys Thr Ala Arg Thr Glu Leu Asn Val Gly Ile Asp
145 150 155

ttc aac tgg gaa tac cct tct tcg aag cat cag cat aag aaa ctt gta 590
Phe Asn Trp Glu Tyr Pro Ser Ser Lys His Gln His Lys Lys Leu Val
160 165 170

aac cga gac cta aaa acc cag tct ggg agt gag atg aag aaa ttt ttg 638
Asn Arg Asp Leu Lys Thr Gln Ser Gly Ser Glu Met Lys Lys Phe Leu
175 180 185 190

agc acc tta act ata gat ggt gta acc cgg agt gag caa gga ttg tac 686
Ser Thr Leu Thr Ile Asp Gly Val Thr Arg Ser Asp Gln Gly Leu Tyr
195 200 205

acc tgt gca gca tcc agt ggg ctg atg acc aag aag aac agc aca ttt 734
Thr Cys Ala Ala Ser Ser Gly Leu Met Thr Lys Lys Asn Ser Thr Phe
210 215 220

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| gtc agg gtc cat gaa aag ggc ccg ggc gac aaa act cac aca tgc cca Val Arg Val His Glu Lys Gly Pro Gly Asp Lys Thr His Thr Cys Pro 225 230 235 | 782 |
| ccg tgc cca gca cct gaa ctc ctg ggg gga ccg tca gtc ttc ctc ttc Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe 240 245 250 | 830 |
| ccc cca aaa ccc aag gac acc ctc atg atc tcc cgg acc cct gag gtc Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val 255 260 265 270 | 878 |
| aca tgc gtg gtg gtg gac gtg agc cac gaa gac cct gag gtc aag ttc Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe 275 280 285 | 926 |
| aac tgg tac gtg gac ggc gtg gag gtg cat aat gcc aag aca aag ccg Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro 290 295 300 | 974 |
| cgg gag gag cag tac aac agc acg tac cgt gtg gtc agc gtc ctc acc Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr 305 310 315 | 1022 |
| gtc ctg cac cag gac tgg ctg aat ggc aag gag tac aag tgc aag gtc Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val 320 325 330 | 1070 |
| tcc aac aaa gcc ctc cca gcc ccc atc gag aaa acc atc tcc aaa gcc Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala 335 340 345 350 | 1118 |
| aaa ggg cag ccc cga gaa cca cag gtg tac acc ctg ccc cca tcc cgg Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg 355 360 365 | 1166 |
| gat gag ctg acc aag aac cag gtc agc ctg acc tgc ctg gtc aaa ggc Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly 370 375 380 | 1214 |
| ttc tat ccc agc gac atc gcc gtg gag tgg gag agc aat ggg cag ccg Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro 385 390 395 | 1262 |
| gag aac aac tac aag acc acg cct ccc gtg ctg gac tcc gac ggc tcc Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser 400 405 410 | 1310 |
| ttc ttc ctc tat agc aag ctc acc gtg gac aag agc agg tgg cag cag Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln 415 420 425 430 | 1358 |
| ggg aac gtc ttc tca tgc tcc gtg atg cat gag gct ctg cac aac cac Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His 435 440 445 | 1406 |
| tac acg cag aag agc ctc tcc ctg tct ccg ggt aaa tgagcggccg c Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys | 1453 |

450

455

<210> 22

<211> 458

<212> PRT

<213> Artificial

<400> 22

Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu Leu Ser
 1 5 10 15

Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Gly Arg Pro Phe Val Glu
 20 25 30

Met Tyr Ser Glu Ile Pro Glu Ile Ile His Met Thr Glu Gly Arg Glu
 35 40 45

Leu Val Ile Pro Cys Arg Val Thr Ser Pro Asn Ile Thr Val Thr Leu
 50 55 60

Lys Lys Phe Pro Leu Asp Thr Leu Ile Pro Asp Gly Lys Arg Ile Ile
 65 70 75 80

Trp Asp Ser Arg Lys Gly Phe Ile Ile Ser Asn Ala Thr Tyr Lys Glu
 85 90 95

Ile Gly Leu Leu Thr Cys Glu Ala Thr Val Asn Gly His Leu Tyr Lys
 100 105 110

Thr Asn Tyr Leu Thr His Arg Gln Thr Asn Thr Ile Ile Asp Val Val
 115 120 125

Leu Ser Pro Ser His Gly Ile Glu Leu Ser Val Gly Glu Lys Leu Val
 130 135 140

Leu Asn Cys Thr Ala Arg Thr Glu Leu Asn Val Gly Ile Asp Phe Asn
 145 150 155 160

Trp Glu Tyr Pro Ser Ser Lys His Gln His Lys Lys Leu Val Asn Arg
 165 170 175

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Leu | Lys | Thr | Gln | Ser | Gly | Ser | Glu | Met | Lys | Lys | Phe | Leu | Ser | Thr | 180 | 185 | 190 | |
| Leu | Thr | Ile | Asp | Gly | Val | Thr | Arg | Ser | Asp | Gln | Gly | Leu | Tyr | Thr | Cys | 195 | 200 | 205 | |
| Ala | Ala | Ser | Ser | Gly | Leu | Met | Thr | Lys | Lys | Asn | Ser | Thr | Phe | Val | Arg | 210 | 215 | 220 | |
| Val | His | Glu | Lys | Gly | Pro | Gly | Asp | Lys | Thr | His | Thr | Cys | Pro | Pro | Cys | 225 | 230 | 235 | 240 |
| Pro | Ala | Pro | Glu | Leu | Leu | Gly | Gly | Pro | Ser | Val | Phe | Leu | Phe | Pro | Pro | 245 | 250 | 255 | |
| Lys | Pro | Lys | Asp | Thr | Leu | Met | Ile | Ser | Arg | Thr | Pro | Glu | Val | Thr | Cys | 260 | 265 | 270 | |
| Val | Val | Val | Asp | Val | Ser | His | Glu | Asp | Pro | Glu | Val | Lys | Phe | Asn | Trp | 275 | 280 | 285 | |
| Tyr | Val | Asp | Gly | Val | Glu | Val | His | Asn | Ala | Lys | Thr | Lys | Pro | Arg | Glu | 290 | 295 | 300 | |
| Glu | Gln | Tyr | Asn | Ser | Thr | Tyr | Arg | Val | Val | Ser | Val | Leu | Thr | Val | Leu | 305 | 310 | 315 | 320 |
| His | Gln | Asp | Trp | Leu | Asn | Gly | Lys | Glu | Tyr | Lys | Cys | Lys | Val | Ser | Asn | 325 | 330 | 335 | |
| Lys | Ala | Leu | Pro | Ala | Pro | Ile | Glu | Lys | Thr | Ile | Ser | Lys | Ala | Lys | Gly | 340 | 345 | 350 | |
| Gln | Pro | Arg | Glu | Pro | Gln | Val | Tyr | Thr | Leu | Pro | Pro | Ser | Arg | Asp | Glu | 355 | 360 | 365 | |
| Leu | Thr | Lys | Asn | Gln | Val | Ser | Leu | Thr | Cys | Leu | Val | Lys | Gly | Phe | Tyr | 370 | 375 | 380 | |
| Pro | Ser | Asp | Ile | Ala | Val | Glu | Trp | Glu | Ser | Asn | Gly | Gln | Pro | Glu | Asn | 385 | 390 | 395 | 400 |
| Asn | Tyr | Lys | Thr | Thr | Pro | Pro | Val | Leu | Asp | Ser | Asp | Gly | Ser | Phe | Phe | 405 | 410 | 415 | |

Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
420 425 430

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
435 440 445

Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
450 455

<210> 23

<211> 1444

<212> DNA

<213> Artificial

<220>

<223> Flt 1 Receptor

<220>

<221> CDS

<222> (69) .. (1436)

<400> 23

aagcttggggc tgcagggtcga tcgactctag aggatcgatc cccggggcgag ctccaattcg 60

caaccacc atg gtc agc tac tgg gac acc ggg gtc ctg ctg tgc gcg ctg 110
Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu
1 5 10

ctc agc tgt ctg ctt ctc aca gga tct agt tcc gga ggt aga cct ttc 158
Leu Ser Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Gly Arg Pro Phe
15 20 25 30

gta gag atg tac agt gaa atc ccc gaa att ata cac atg act gaa gga 206
Val Glu Met Tyr Ser Glu Ile Pro Glu Ile Ile His Met Thr Glu Gly
35 40 45

agg gag ctc gtc att ccc tgc cgg gtt acg tca cct aac atc act gtt 254
Arg Glu Leu Val Ile Pro Cys Arg Val Thr Ser Pro Asn Ile Thr Val
50 55 60

act tta aaa aag ttt cca ctt gac act ttg atc cct gat gga aaa cgc 302
Thr Leu Lys Lys Phe Pro Leu Asp Thr Leu Ile Pro Asp Gly Lys Arg
65 70 75

| | |
|-----------------------------------------------------------------|------|
| ata atc tgg gac agt aga aag ggc ttc atc ata tca aat gca acg tac | 350 |
| Ile Ile Trp Asp Ser Arg Lys Gly Phe Ile Ile Ser Asn Ala Thr Tyr | |
| 80 85 90 | |
| aaa gaa ata ggg ctt ctg acc tgt gaa gca aca gtc aat ggg cat ttg | 398 |
| Lys Glu Ile Gly Leu Leu Thr Cys Glu Ala Thr Val Asn Gly His Leu | |
| 95 100 105 110 | |
| tat aag aca aac tat ctc aca cat cga caa acc aat aca atc ata gat | 446 |
| Tyr Lys Thr Asn Tyr Leu Thr His Arg Gln Thr Asn Thr Ile Ile Asp | |
| 115 120 125 | |
| atc cag ctg ttg ccc agg aag tgg ctg gag ctg ctg gta ggg gag aag | 494 |
| Ile Gln Leu Leu Pro Arg Lys Ser Leu Glu Leu Leu Val Gly Glu Lys | |
| 130 135 140 | |
| ctg gtc ctc aac tgc acc gtg tgg gct gag ttt aac tca ggt gtc acc | 542 |
| Leu Val Leu Asn Cys Thr Val Trp Ala Glu Phe Asn Ser Gly Val Thr | |
| 145 150 155 | |
| ttt gac tgg gac tac cca ggg aag cag gca gag cgg ggt aag tgg gtg | 590 |
| Phe Asp Trp Asp Tyr Pro Gly Lys Gln Ala Glu Arg Gly Lys Trp Val | |
| 160 165 170 | |
| ccc gag cga cgc tcc caa cag acc cac aca gaa ctc tcc agc atc ctg | 638 |
| Pro Glu Arg Arg Ser Gln Gln Thr His Thr Glu Leu Ser Ser Ile Leu | |
| 175 180 185 190 | |
| acc atc cac aac gtc agc cag cac gac ctg ggc tgg tat gtg tgc aag | 686 |
| Thr Ile His Asn Val Ser Gln His Asp Leu Gly Ser Tyr Val Cys Lys | |
| 195 200 205 | |
| gcc aac aac ggc atc cag cga ttt cgg gag agc acc gag gtc att gtg | 734 |
| Ala Asn Asn Gly Ile Gln Arg Phe Arg Glu Ser Thr Glu Val Ile Val | |
| 210 215 220 | |
| cat gaa aat ggc ccg ggc gac aaa act cac aca tgc cca ccg tgc cca | 782 |
| His Glu Asn Gly Pro Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro | |
| 225 230 235 | |
| gca cct gaa ctc ctg ggg gga ccg tca gtc ttc ctc ttc ccc cca aaa | 830 |
| Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys | |
| 240 245 250 | |
| ccc aag gac acc ctc atg atc tcc cgg acc cct gag gtc aca tgc gtg | 878 |
| Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val | |
| 255 260 265 270 | |
| gtg gtg gac gtg agc cac gaa gac cct gag gtc aag ttc aac tgg tac | 926 |
| Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr | |
| 275 280 285 | |
| gtg gac ggc gtg gag gtg cat aat gcc aag aca aag ccg cgg gag gag | 974 |
| Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu | |
| 290 295 300 | |
| cag tac aac agc acg tac cgt gtg gtc agc gtc ctc acc gtc ctg cac | 1022 |
| Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His | |

| 305 | 310 | 315 | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|------|
| cag gac tgg ctg aat ggc aag gag tac aag tgc aag gtc tcc aac aaa Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys 320 325 330 | | | 1070 |
| gcc ctc cca gcc ccc atc gag aaa acc atc tcc aaa gcc aaa ggg cag Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln 335 340 345 350 | | | 1118 |
| ccc cga gaa cca cag gtg tac acc ctg ccc cca tcc cgg gat gag ctg Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu 355 360 365 | | | 1166 |
| acc aag aac cag gtc agc ctg acc tgc ctg gtc aaa ggc ttc tat ccc Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro 370 375 380 | | | 1214 |
| agc gac atc gcc gtg gag tgg gag agc aat ggg cag ccg gag aac aac Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn 385 390 395 | | | 1262 |
| tac aag acc acg cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu 400 405 410 | | | 1310 |
| tat agc aag ctc acc gtg gac aag agc agg tgg cag cag ggg aac gtc Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val 415 420 425 430 | | | 1358 |
| ttc tca tgc tcc gtg atg cat gag gct ctg cac aac cac tac acg cag Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln 435 440 445 | | | 1406 |
| aag agc ctc tcc ctg tct ccg ggt aaa tga gcggccgc Lys Ser Leu Ser Leu Ser Pro Gly Lys 450 455 | | | 1444 |

<210> 24

<211> 455

<212> PRT

<213> Artificial

<400> 24

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Val | Ser | Tyr | Trp | Asp | Thr | Gly | Val | Leu | Leu | Cys | Ala | Leu | Leu | Ser |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cys | Leu | Leu | Leu | Thr | Gly | Ser | Ser | Ser | Gly | Gly | Arg | Pro | Phe | Val | Glu |
| | | | 20 | | | | 25 | | | | | 30 | | | |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|
| Met | Tyr | Ser | Glu | Ile | Pro | Glu | Ile | Ile | His | Met | Thr | Glu | Gly | Arg | Glu | | | |
| | | 35 | | | | | 40 | | | | | 45 | | | | | | |
| Leu | Val | Ile | Pro | Cys | Arg | Val | Thr | Ser | Pro | Asn | Ile | Thr | Val | Thr | Leu | | | |
| | 50 | | | | | 55 | | | | 60 | | | | | | | | |
| Lys | Lys | Phe | Pro | Leu | Asp | Thr | Leu | Ile | Pro | Asp | Gly | Lys | Arg | Ile | Ile | | | |
| 65 | | | | | 70 | | | | 75 | | | | | | 80 | | | |
| Trp | Asp | Ser | Arg | Lys | Gly | Phe | Ile | Ile | Ser | Asn | Ala | Thr | Tyr | Lys | Glu | | | |
| | | | | 85 | | | | | 90 | | | | | 95 | | | | |
| Ile | Gly | Leu | Leu | Thr | Cys | Glu | Ala | Thr | Val | Asn | Gly | His | Leu | Tyr | Lys | | | |
| | | | 100 | | | | | 105 | | | | | 110 | | | | | |
| Thr | Asn | Tyr | Leu | Thr | His | Arg | Gln | Thr | Asn | Thr | Ile | Ile | Asp | Ile | Gln | | | |
| | | 115 | | | | | 120 | | | | | 125 | | | | | | |
| Leu | Leu | Pro | Arg | Lys | Ser | Leu | Glu | Leu | Leu | Val | Gly | Glu | Lys | Leu | Val | | | |
| | 130 | | | | | 135 | | | | | 140 | | | | | | | |
| Leu | Asn | Cys | Thr | Val | Trp | Ala | Glu | Phe | Asn | Ser | Gly | Val | Thr | Phe | Asp | | | |
| 145 | | | | | 150 | | | | 155 | | | | | | 160 | | | |
| Trp | Asp | Tyr | Pro | Gly | Lys | Gln | Ala | Glu | Arg | Gly | Lys | Trp | Val | Pro | Glu | | | |
| | | | | 165 | | | | | 170 | | | | | 175 | | | | |
| Arg | Arg | Ser | Gln | Gln | Thr | His | Thr | Glu | Leu | Ser | Ser | Ile | Leu | Thr | Ile | | | |
| | | | 180 | | | | | 185 | | | | | 190 | | | | | |
| His | Asn | Val | Ser | Gln | His | Asp | Leu | Gly | Ser | Tyr | Val | Cys | Lys | Ala | Asn | | | |
| | | 195 | | | | | 200 | | | | | 205 | | | | | | |
| Asn | Gly | Ile | Gln | Arg | Phe | Arg | Glu | Ser | Thr | Glu | Val | Ile | Val | His | Glu | | | |
| | 210 | | | | | 215 | | | | | 220 | | | | | | | |
| Asn | Gly | Pro | Gly | Asp | Lys | Thr | His | Thr | Cys | Pro | Pro | Cys | Pro | Ala | Pro | | | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | | | |
| Glu | Leu | Leu | Gly | Gly | Pro | Ser | Val | Phe | Leu | Phe | Pro | Pro | Lys | Pro | Lys | | | |
| | | | 245 | | | | | 250 | | | | | | 255 | | | | |
| Asp | Thr | Leu | Met | Ile | Ser | Arg | Thr | Pro | Glu | Val | Thr | Cys | Val | Val | Val | | | |
| | | | 260 | | | | 265 | | | | | | 270 | | | | | |

Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp
 275 280 285

Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr
 290 295 300

Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp
 305 310 315 320

Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu
 325 330 335

Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg
 340 345 350

Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys
 355 360 365

Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp
 370 375 380

Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys
 385 390 395 400

Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser
 405 410 415

Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser
 420 425 430

Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
 435 440 445

Leu Ser Leu Ser Pro Gly Lys
 450 455

<210> 25

<211> 1377

<212> DNA

<213> Artificial

<220>

<223> Flt 1 Receptor

<220>

<221> CDS

<222> (1) .. (1377)

<400> 25

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| atg | gtc | agc | tac | tgg | gac | acc | ggg | gtc | ctg | ctg | tgc | gcg | ctg | ctc | agc | 48 |
| Met | Val | Ser | Tyr | Trp | Asp | Thr | Gly | Val | Leu | Leu | Cys | Ala | Leu | Leu | Ser | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| tgt | ctg | ctt | ctc | aca | gga | tct | agt | tcc | gga | agt | gat | acc | ggg | aga | cct | 96 |
| Cys | Leu | Leu | Leu | Thr | Gly | Ser | Ser | Ser | Gly | Ser | Asp | Thr | Gly | Arg | Pro | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ttc | gta | gag | atg | tac | agt | gaa | atc | ccc | gaa | att | ata | cac | atg | act | gaa | 144 |
| Phe | Val | Glu | Met | Tyr | Ser | Glu | Ile | Pro | Glu | Ile | Ile | His | Met | Thr | Glu | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| gga | agg | gag | ctc | gtc | att | ccc | tgc | cgg | gtt | acg | tca | cct | aac | atc | act | 192 |
| Gly | Arg | Glu | Leu | Val | Ile | Pro | Cys | Arg | Val | Thr | Ser | Pro | Asn | Ile | Thr | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| gtt | act | tta | aaa | aag | ttt | cca | ctt | gac | act | ttg | atc | cct | gat | gga | aaa | 240 |
| Val | Thr | Leu | Lys | Lys | Phe | Pro | Leu | Asp | Thr | Leu | Ile | Pro | Asp | Gly | Lys | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| cgc | ata | atc | tgg | gac | agt | aga | aag | ggc | ttc | atc | ata | tca | aat | gca | acg | 288 |
| Arg | Ile | Ile | Trp | Asp | Ser | Arg | Lys | Gly | Phe | Ile | Ile | Ser | Asn | Ala | Thr | |
| | | | | 85 | | | | | 90 | | | | | 95 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| tac | aaa | gaa | ata | ggg | ctt | ctg | acc | tgt | gaa | gca | aca | gtc | aat | ggg | cat | 336 |
| Tyr | Lys | Glu | Ile | Gly | Leu | Leu | Thr | Cys | Glu | Ala | Thr | Val | Asn | Gly | His | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ttg | tat | aag | aca | aac | tat | ctc | aca | cat | cga | caa | acc | aat | aca | atc | ata | 384 |
| Leu | Tyr | Lys | Thr | Asn | Tyr | Leu | Thr | His | Arg | Gln | Thr | Asn | Thr | Ile | Ile | |
| | | 115 | | | | 120 | | | | | | 125 | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| gat | gtg | gtt | ctg | agt | ccg | tct | cat | gga | att | gaa | cta | tct | gtt | gga | gaa | 432 |
| Asp | Val | Val | Leu | Ser | Pro | Ser | His | Gly | Ile | Glu | Leu | Ser | Val | Gly | Glu | |
| | 130 | | | | | 135 | | | | | 140 | | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| aag | ctt | gtc | tta | aat | tgt | aca | gca | aga | act | gaa | cta | aat | gtg | ggg | att | 480 |
| Lys | Leu | Val | Leu | Asn | Cys | Thr | Ala | Arg | Thr | Glu | Leu | Asn | Val | Gly | Ile | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| gac | ttc | aac | tgg | gaa | tac | cct | tct | tcg | aag | cat | cag | cat | aag | aaa | ctt | 528 |
| Asp | Phe | Asn | Trp | Glu | Tyr | Pro | Ser | Ser | Lys | His | Gln | His | Lys | Lys | Leu | |
| | | | | 165 | | | | | 170 | | | | | 175 | | |

| | |
|-----------------------------------------------------------------|------|
| gta aac cga gac cta aaa acc cag tct ggg agt gag atg aag aaa ttt | 576 |
| Val Asn Arg Asp Leu Lys Thr Gln Ser Gly Ser Glu Met Lys Lys Phe | |
| 180 185 190 | |
| ttg agc acc tta act ata gat ggt gta acc cgg agt gac caa gga ttg | 624 |
| Leu Ser Thr Leu Thr Ile Asp Gly Val Thr Arg Ser Asp Gln Gly Leu | |
| 195 200 205 | |
| tac acc tgt gca gca tcc agt ggg ctg atg acc aag aag aac agc aca | 672 |
| Tyr Thr Cys Ala Ala Ser Ser Gly Leu Met Thr Lys Lys Asn Ser Thr | |
| 210 215 220 | |
| ttt gtc agg gtc cat gaa aag gac aaa act cac aca tgc cca ccg tgc | 720 |
| Phe Val Arg Val His Glu Lys Asp Lys Thr His Thr Cys Pro Pro Cys | |
| 225 230 235 240 | |
| cca gca cct gaa ctc ctg ggg gga ccg tca gtc ttc ctc ttc ccc cca | 768 |
| Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro | |
| 245 250 255 | |
| aaa ccc aag gac acc ctc atg atc tcc cgg acc cct gag gtc aca tgc | 816 |
| Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys | |
| 260 265 270 | |
| gtg gtg gtg gac gtg agc cac gaa gac cct gag gtc aag ttc aac tgg | 864 |
| Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp | |
| 275 280 285 | |
| tac gtg gac ggc gtg gag gtg cat aat gcc aag aca aag ccg cgg gag | 912 |
| Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu | |
| 290 295 300 | |
| gag cag tac aac agc acg tac cgt gtg gtc agc gtc ctc acc gtc ctg | 960 |
| Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu | |
| 305 310 315 320 | |
| cac cag gac tgg ctg aat ggc aag gag tac aag tgc aag gtc tcc aac | 1008 |
| His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn | |
| 325 330 335 | |
| aaa gcc ctc cca gcc ccc atc gag aaa acc atc tcc aaa gcc aaa ggg | 1056 |
| Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly | |
| 340 345 350 | |
| cag ccc cga gaa cca cag gtg tac acc ctg ccc cca tcc cgg gat gag | 1104 |
| Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu | |
| 355 360 365 | |
| ctg acc aag aac cag gtc agc ctg acc tgc ctg gtc aaa ggc ttc tat | 1152 |
| Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr | |
| 370 375 380 | |
| ccc agc gac atc gcc gtg gag tgg gag agc aat ggg cag ccg gag aac | 1200 |
| Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn | |
| 385 390 395 400 | |

| | |
|-----------------------------------------------------------------|------|
| aac tac aag acc acg cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc | 1248 |
| Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe | |
| 405 410 415 | |

| | |
|-----------------------------------------------------------------|------|
| ctc tac agc aag ctc acc gtg gac aag agc agg tgg cag cag ggg aac | 1296 |
| Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn | |
| 420 425 430 | |

| | |
|-----------------------------------------------------------------|------|
| gtc ttc tca tgc tcc gtg atg cat gag gct ctg cac aac cac tac acg | 1344 |
| Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr | |
| 435 440 445 | |

| | |
|---------------------------------------------|------|
| cag aag agc ctc tcc ctg tct ccg ggt aaa tga | 1377 |
| Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys | |
| 450 455 | |

<210> 26

<211> 458

<212> PRT

<213> Artificial

<400> 26

| |
|-----------------------------------------------------------------|
| Met Val Ser Tyr Trp Asp Thr Gly Val Leu Leu Cys Ala Leu Leu Ser |
| 1 5 10 15 |

| |
|-----------------------------------------------------------------|
| Cys Leu Leu Leu Thr Gly Ser Ser Ser Gly Ser Asp Thr Gly Arg Pro |
| 20 25 30 |

| |
|-----------------------------------------------------------------|
| Phe Val Glu Met Tyr Ser Glu Ile Pro Glu Ile Ile His Met Thr Glu |
| 35 40 45 |

| |
|-----------------------------------------------------------------|
| Gly Arg Glu Leu Val Ile Pro Cys Arg Val Thr Ser Pro Asn Ile Thr |
| 50 55 60 |

| |
|-----------------------------------------------------------------|
| Val Thr Leu Lys Lys Phe Pro Leu Asp Thr Leu Ile Pro Asp Gly Lys |
| 65 70 75 80 |

| |
|-----------------------------------------------------------------|
| Arg Ile Ile Trp Asp Ser Arg Lys Gly Phe Ile Ile Ser Asn Ala Thr |
| 85 90 95 |

| |
|-----------------------------------------------------------------|
| Tyr Lys Glu Ile Gly Leu Leu Thr Cys Glu Ala Thr Val Asn Gly His |
| 100 105 110 |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Tyr | Lys | Thr | Asn | Tyr | Leu | Thr | His | Arg | Gln | Thr | Asn | Thr | Ile | Ile | 115 | 120 | 125 |
| Asp | Val | Val | Leu | Ser | Pro | Ser | His | Gly | Ile | Glu | Leu | Ser | Val | Gly | Glu | 130 | 135 | 140 |
| Lys | Leu | Val | Leu | Asn | Cys | Thr | Ala | Arg | Thr | Glu | Leu | Asn | Val | Gly | Ile | 145 | 150 | 155 |
| Asp | Phe | Asn | Trp | Glu | Tyr | Pro | Ser | Ser | Lys | His | Gln | His | Lys | Lys | Leu | 165 | 170 | 175 |
| Val | Asn | Arg | Asp | Leu | Lys | Thr | Gln | Ser | Gly | Ser | Glu | Met | Lys | Lys | Phe | 180 | 185 | 190 |
| Leu | Ser | Thr | Leu | Thr | Ile | Asp | Gly | Val | Thr | Arg | Ser | Asp | Gln | Gly | Leu | 195 | 200 | 205 |
| Tyr | Thr | Cys | Ala | Ala | Ser | Ser | Gly | Leu | Met | Thr | Lys | Lys | Asn | Ser | Thr | 210 | 215 | 220 |
| Phe | Val | Arg | Val | His | Glu | Lys | Asp | Lys | Thr | His | Thr | Cys | Pro | Pro | Cys | 225 | 230 | 235 |
| Pro | Ala | Pro | Glu | Leu | Leu | Gly | Gly | Pro | Ser | Val | Phe | Leu | Phe | Pro | Pro | 245 | 250 | 255 |
| Lys | Pro | Lys | Asp | Thr | Leu | Met | Ile | Ser | Arg | Thr | Pro | Glu | Val | Thr | Cys | 260 | 265 | 270 |
| Val | Val | Val | Asp | Val | Ser | His | Glu | Asp | Pro | Glu | Val | Lys | Phe | Asn | Trp | 275 | 280 | 285 |
| Tyr | Val | Asp | Gly | Val | Glu | Val | His | Asn | Ala | Lys | Thr | Lys | Pro | Arg | Glu | 290 | 295 | 300 |
| Glu | Gln | Tyr | Asn | Ser | Thr | Tyr | Arg | Val | Val | Ser | Val | Leu | Thr | Val | Leu | 305 | 310 | 315 |
| His | Gln | Asp | Trp | Leu | Asn | Gly | Lys | Glu | Tyr | Lys | Cys | Lys | Val | Ser | Asn | 325 | 330 | 335 |
| Lys | Ala | Leu | Pro | Ala | Pro | Ile | Glu | Lys | Thr | Ile | Ser | Lys | Ala | Lys | Gly | 340 | 345 | 350 |

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu
 355 360 365

Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr
 370 375 380

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
 385 390 395 400

Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
 405 410 415

Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
 420 425 430

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
 435 440 445

Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
 450 455

<210> 27

<211> 431

<212> PRT

<213> Artificial

<220>

<223> Peptide

<400> 27

Gly Arg Pro Phe Val Glu Met Tyr Ser Glu Ile Pro Glu Ile Ile His
 1 5 10 15

Met Thr Glu Gly Arg Glu Leu Val Ile Pro Cys Arg Val Thr Ser Pro
 20 25 30

Asn Ile Thr Val Thr Leu Lys Lys Phe Pro Leu Asp Thr Leu Ile Pro
 35 40 45

Asp Gly Lys Arg Ile Ile Trp Asp Ser Arg Lys Gly Phe Ile Ile Ser
 50 55 60

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Ala | Thr | Tyr | Lys | Glu | Ile | Gly | Leu | Leu | Thr | Cys | Glu | Ala | Thr | Val | 65 | 70 | 75 | 80 |
| Asn | Gly | His | Leu | Tyr | Lys | Thr | Asn | Tyr | Leu | Thr | His | Arg | Gln | Thr | Asn | 85 | 90 | 95 | |
| Thr | Ile | Ile | Asp | Val | Val | Leu | Ser | Pro | Ser | His | Gly | Ile | Glu | Leu | Ser | 100 | 105 | 110 | |
| Val | Gly | Glu | Lys | Leu | Val | Leu | Asn | Cys | Thr | Ala | Arg | Thr | Glu | Leu | Asn | 115 | 120 | 125 | |
| Val | Gly | Ile | Asp | Phe | Asn | Trp | Glu | Tyr | Pro | Ser | Ser | Lys | His | Gln | His | 130 | 135 | 140 | |
| Lys | Lys | Leu | Val | Asn | Arg | Asp | Leu | Lys | Thr | Gln | Ser | Gly | Ser | Glu | Met | 145 | 150 | 155 | 160 |
| Lys | Lys | Phe | Leu | Ser | Thr | Leu | Thr | Ile | Asp | Gly | Val | Thr | Arg | Ser | Asp | 165 | 170 | 175 | |
| Gln | Gly | Leu | Tyr | Thr | Cys | Ala | Ala | Ser | Ser | Gly | Leu | Met | Thr | Lys | Lys | 180 | 185 | 190 | |
| Asn | Ser | Thr | Phe | Val | Arg | Val | His | Glu | Lys | Gly | Pro | Gly | Asp | Lys | Thr | 195 | 200 | 205 | |
| His | Thr | Cys | Pro | Pro | Cys | Pro | Ala | Pro | Glu | Leu | Leu | Gly | Gly | Pro | Ser | 210 | 215 | 220 | |
| Val | Phe | Leu | Phe | Pro | Pro | Lys | Pro | Lys | Asp | Thr | Leu | Met | Ile | Ser | Arg | 225 | 230 | 235 | 240 |
| Thr | Pro | Glu | Val | Thr | Cys | Val | Val | Val | Asp | Val | Ser | His | Glu | Asp | Pro | 245 | 250 | 255 | |
| Glu | Val | Lys | Phe | Asn | Trp | Tyr | Val | Asp | Gly | Val | Glu | Val | His | Asn | Ala | 260 | 265 | 270 | |
| Lys | Thr | Lys | Pro | Arg | Glu | Glu | Gln | Tyr | Asn | Ser | Thr | Tyr | Arg | Val | Val | 275 | 280 | 285 | |
| Ser | Val | Leu | Thr | Val | Leu | His | Gln | Asp | Trp | Leu | Asn | Gly | Lys | Glu | Tyr | 290 | 295 | 300 | |
| Lys | Cys | Lys | Val | Ser | Asn | Lys | Ala | Leu | Pro | Ala | Pro | Ile | Glu | Lys | Thr | 305 | 310 | 315 | 320 |
| Ile | Ser | Lys | Ala | Lys | Gly | Gln | Pro | Arg | Glu | Pro | Gln | Val | Tyr | Thr | Leu | 325 | 330 | 335 | |
| Pro | Pro | Ser | Arg | Asp | Glu | Leu | Thr | Lys | Asn | Gln | Val | Ser | Thr | Cys | Leu | 340 | 345 | 350 | |
| Val | Lys | Gly | Phe | Tyr | Pro | Ser | Asp | Ile | Ala | Val | Glu | Trp | Glu | Ser | Asn | 355 | 360 | 365 | |
| Gly | Gln | Pro | Glu | Asn | Asn | Tyr | Lys | Thr | Thr | Pro | Pro | Val | Leu | Asp | Ser | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 370 | | | | | | 375 | | | | | | 380 | | | |
| Asp | Gly | Ser | Phe | Phe | Leu | Tyr | Ser | Lys | Leu | Thr | Val | Asp | Lys | Ser | Arg |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Trp | Gln | Gln | Gly | Asn | Val | Phe | Ser | Cys | Ser | Val | Met | His | Glu | Ala | Leu |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| His | Asn | His | Tyr | Thr | Gln | Lys | Ser | Leu | Ser | Leu | Ser | Pro | Gly | Lys | |
| | | | 420 | | | | | 425 | | | | | 430 | | |